

APPLYING INSTITUTIONAL THEORY TO
THE STUDY OF THE MULTINATIONAL ENTERPRISE:
PARENTAL CONTROL AND ISOMORPHISM AMONG PERSONNEL
PRACTICES IN AMERICAN MANUFACTURERS IN JAPAN

by

PATRICIA A. ROBINSON

B.A., Pomona College (1983)

Submitted to the Sloan School of Management
in Partial Fulfillment of
the Requirements of the Degree of
Doctor of Philosophy in Management

at the

Massachusetts Institute of Technology
February 1994

© Massachusetts Institute of Technology (1994)

ALL RIGHTS RESERVED

Signature of Author _____
MIT Sloan School of Management
October 15, 1993

Certified by _____
D. Eleanor Westney
Associate Professor of International Management
Thesis Supervisor

Lotte Bailyn
T. Wilson Professor of Management
Thesis Committee

Mauro F. Guillen
Assistant Professor of International Management and Sociology
Thesis Committee

Accepted by _____
James Orlin
Associate Dean, Doctoral Program

MASSACHUSETTS INSTITUTE
OF TECHNOLOGY

DEC 03 1993

LIBRARIES

ARCHIVES

V. 1

**APPLYING INSTITUTIONAL THEORY TO
THE STUDY OF THE MULTINATIONAL ENTERPRISE:
PARENTAL CONTROL AND ISOMORPHISM AMONG PERSONNEL
PRACTICES IN AMERICAN MANUFACTURERS IN JAPAN**

by

PATRICIA A. ROBINSON

Submitted to the Alfred P. Sloan School of Management
in partial fulfillment of the requirements of the Degree of
Doctor of Philosophy in Management, February, 1994.

ABSTRACT

A critical issue facing multinational firms operating across national boundaries is the control and coordination of geographically dispersed activities. A major challenge lies in integrating practices that contribute to firmwide goals while remaining responsive to local practices that are necessary for the subsidiary's smooth operation in the host country. The subsidiary thus faces frequently conflicting pressures from both the parent firm and the local environment (Westney 1989, 1993, Rosenzweig and Singh 1990).

Traditionally, multinational firm strategy has been analyzed in terms of local responsiveness to host country customer tastes and global coordination of activities to capitalize on multinational customers, multinational competition, geographically disparate technology and investment intensity, and economies of scale and scope. This thesis takes the global integration-local responsiveness framework and extends it to personnel practices, positing that multinational firms face pressures to be locally responsive to employee preferences and expectations, labor markets, and employee practices in competing firms. Similarly, multinational firms globally integrate certain personnel practices across subsidiaries to aid in coordinating technology and firm learning. To achieve this integration, parent firms often employ various control and coordination mechanisms.

"Parental control" is defined here in the context of institutional theory, drawing on coercive isomorphism to develop another concept of isomorphic pressure, "mandated isomorphism." Mandated isomorphism addresses organizational pressure on the subsidiary from the parent firm. This thesis proposes several ways to operationalize mandated isomorphic pressure or parent firm control and develops a measure of isomorphism or similarity among practices, using the criteria that the practice be strongly emphasized in the parent and similarly emphasized in the subsidiary.

The dissertation compares the personnel practices of American manufacturing subsidiaries in Japan to those of their parent firms in America in relationship to parental control over the subsidiary. It utilizes survey and interview data from 55 of the 171 largest American manufacturers in Japan. The radically different employment environments of Japan and the U.S. highlight the differences and similarities in personnel practices and raise the issue of whether parental control can overcome local environmental pressures. To compare these parent and subsidiary firm personnel practices, this thesis focuses on routines or practices involved in recruiting, training, and performance appraisal and their relationship to parental control.

My findings suggest that practices which potentially contribute to aligning the firm toward global integration, such as performance appraisal and training, are more likely to demonstrate similar emphasis in both the parent and subsidiary in relation to strong parental control through budgeting, goal setting, socialization and task/structural interdependence. In contrast, other practices which might be locally responsive, such as recruiting, do not demonstrate strong relationships to strong parental control.

Thesis supervisor: D. Eleanor Westney

Thesis Committee: Lotte Bailyn and Mauro Guillen

**Applying institutional theory to
the study of the multinational enterprise:
parental control and
isomorphism among subsidiary personnel practices**

Table of Contents

<i>Acknowledgments</i>	8
<u>1. Introduction</u>	10
Research Questions	
Overview of Study	

Part 1: Literature Review

<u>2. Placing the multinational firm in the context of institutional theory with regard to global integration and local responsiveness</u>	16
---	----

- MNEs in the context of the integration and responsiveness framework
 - A. Pressures for local responsiveness,
 - B. Pressures for global integration
 - C. Evolution of the integration/responsiveness framework through the 1980s.
 - Responses of multinational, global and international firms to these two pressures.
 - Strategic control in MNEs

- MNEs in the context of institutional theory
 - A. Brief overview of institutional theory
 - B. Isomorphic pressures defined
 - Conflicting pulls on the subsidiary from the parent firm and the local environment
 - C. Isomorphism defined
 - D. Personnel practices as indicators of the effects of isomorphic pulls

<u>3. The MNE in the context of isomorphic pulls: Exploring coercive, mandated, and mimetic isomorphic pressures on multinational firms</u>	45
--	----

- Coercive isomorphic pressures
 - General description of coercive isomorphism and how it subsumes the integration-responsiveness framework

Mandated isomorphic pressures

- A. Control of the subsidiary by the parent through task and structural interdependence
- B. Control through financial resource allocation related to budgeting and ownership
- C. Control through rules and policy
- D. Control through goal setting
- E. Socialization of subsidiary managers (a hybrid of normative isomorphic pressure)
- F. Control through reference and communication (a hybrid of mimetic isomorphic pressure)

Mimetic Isomorphic pressures

General description of mimetic isomorphic pressures and how it subsumes the integration-responsiveness framework

- A. Reference groups
- B. Density of communication: influence local vs. overseas contacts
- C. Mimetic Isomorphism: duplication under uncertainty and changing products and processes
- D. Duplication under competition: competitive isomorphism

Imprinting

General description of imprinting

- A. Influence of conditions at time of founding (proportion of non-Japanese employees and top management, proportion of equity, age and size of Japanese operation now and at time of founding.)
- B. Evolution of the organization and inertia: change in HRM practices now and since founding
- C. The influence of environmental change

4. The evolution of the literature on American firms in Japan

67

Why these environments, what issues they highlight, why this is interesting

How these firms constitute an organizational field

Evolution of the literature from "how to" and market entry books to more organizational issues

Important variables

Evolution of government regulation on foreign direct investment

Conditions for uniform market entry and imprinting now and since founding

5. Placing personnel practices in the context of routines, institutional theory, and the Japanese labor market

94

Defining routines and practices a la Nelson and Winter
Why personnel practices were selected for study in this project
and why they are interesting for study of institutional theory
How personnel practices highlight local responsiveness, global integration
The labor market in Japan

6. Recruiting and selection in Japan

125

Recruiting and Selection in Japan--two market entry points
New college graduates
Mid-career hires
Standard Japanese practices in these two areas: review of the literature
Practices of American firms in Japan: evolution of the literature
Important variables
Sources of recruits
Methods of selecting employees
Criteria for selecting and hiring employees

7. Performance appraisal in large Japanese firms

158

Self-evaluation
MBO
Achievement format
Ranking
Criteria
Schedule

8. Training in large Japanese firms

167

Entry level training at Dai Nippon Ink and Chemical
OJT, functional training
Mid-management training
International training

9. Research design

184

Unit of analysis
Method of data collection
Controlling the sample
Pilot tests

Part 2: Findings

10. The American manufacturer in Japan and its personnel practices: descriptive statistics

190

Representativeness of respondents
Examining generalizability of results through non-response bias

Description of firms in sample
Industries represented
% American equity
Firm age and length of time in Japan
Functional organization of Japanese operations
Market orientation of Japanese subsidiaries
Employee count and composition

General overview of emphasis of practices in parents and subsidiaries
Recruiting
Performance appraisal
Training

11. Operationalizing parental control through the use of composited isomorphic pressure indicators

215

Criteria for compositing each group of isomorphic pressure variables
Theoretical coherence
Statistical coherence
Correlations
Final iteration eigenvalues and eigenvectors
Control of the subsidiary by the parent through task and structural interdependence
Control through financial resource allocation related to budgeting and ownership
Control through rules and policy
Control through goal setting
Socialization of subsidiary managers (a hybrid of normative isomorphic pressure)
Control through reference and communication (a hybrid of mimetic isomorphic pressure)

12. Operationalizing isomorphism among personnel practice routines in American parent firms and their subsidiaries in Japan

255

Generic concept of isomorphism, give examples of various applications
Operationalizing isomorphism for this study
Criteria:
1. Strong emphasis in the parent (emphasis > 3)
2. Difference scores (mean diff < 1).
General overview of emphasis of practices
Practices strongly emphasized by parent firms
Subsidiary emphasis on practices strongly emphasized in the parent firm
Parent- subsidiary difference scores for practices strongly emphasized in the parent

13. Findings: Relations between parental control and isomorphism of parent-subsidiary personnel practices 289

Mandated isomorphic pressures and their relationships to various practices
Individual practices and their relationships to isomorphic pressures
Comparing the effect sizes of mandated isomorphic indicators

14. Conclusions and implications for the multinational firm and for theory 310

Integration-Responsiveness Framework
applied to practices as well as businesses, functions, and tasks

Recruiting, training, and performance appraisal

Local responsiveness
Descriptive conclusions
Normative conclusions
Future research

Global integration
Descriptive conclusions
Normative conclusions
Future research

Future research on personnel practices in MNEs

Bibliography 318

Appendices

Survey instrument 367

List of American companies in Japan with over 50% American equity and over 100 employees in their Japanese operations 384

SAS Log 418

Acknowledgments

It is truly a pleasure to acknowledge the contributions of the numerous people who provided counsel and support throughout the successive stages involved in the preparation of this dissertation. I owe an especially great debt of gratitude to Professor D. Eleanor Westney of Sloan whose thinking shaped my path at Sloan and whose example has set the standard for quality research as well as for graciousness and unfailing commitment to those under her guidance. I am also grateful to Professor Lotte Bailyn of Sloan whose counsel guided my data analysis and whose comments proved invaluable, and to Professor Stephen Carroll of the University of Maryland whose work on personnel practices provided the foundation for a my questionnaire and whose professional and personal generosity have been enormous. At Sloan, I wish to thank in particular Mauro Guillen and Donald Lessard. In Japan, Caroline Matano Yang, Shigenkuni Kawamura, Ikujiro Nonaka, Peter Cohen and Kiyonori Sakakibara deserve special thanks for their support and generosity.

Countless individuals in various organizations also contributed greatly to the various stages of this research. I would like to thank in particular Toshimasa Araki, Aryeh Blumberg, Dwight Bohm, Ann Conduit, Louise Cordell, David Ewert, Nobuhiro Fujisaki, Robin Garnsworthy, Peter Gourevitch, William Halpen, Jennifer Hirsch, Emily Hughes, Munehiro Ichikawa, Hideo Ishida, Kazuo Kambe, Yuichi Kariatsumari, Yasutake Kobayashi, Hiroyuki Misumi, Akimasa Mitsuta, Yukihiko Nakai, Yoshiaki Ogawa, Seiji Ogino, Yasuhisa Ogushi, Takeshi Ohe, Daisuke and Sayuri Okamoto, Larry Rosenberg, Tsuneo Sakai, Eiichi Sakamoto, Hidero Shimada, Takashi Sumita, Masataka Suzuki, Kazuo Takeuchi, Tatsuya Tanami, Eiichi Tanuma, and Fumie Urashima. I would also like to express my gratitude for the kind hospitality of the Yokokawas, Ishibashis, Inoues, Mitsutas, Nakanos, Tsugies, and Sones.

Numerous institutions also offered valuable assistance. The following organizations provided various types of assistance without which this study would not have been possible: the American Chamber of Commerce in Japan, Hitotsubashi University, International House, and the following companies: Ajinomoto General Foods Inc., AMD Japan Ltd., Amway Japan Ltd., Applied Materials Japan Inc., Asahi Komag Co. Ltd., Avery-Toppan Co. Ltd., Avon Products Ltd., Bausch & Lomb Co. Ltd., Beckman Instruments Inc., Braun Japan K.K., Bristol-Myers Squibb K.K., Cray Research Japan Ltd., Dainabot Co., Digital Equipment Corp. Japan, Display Technologies Inc., Dow Corning Toray Silicone Co. Ltd., Eastman Kodak Japan Ltd., Eli Lilly Japan K.K., Esso Sekiyu K.K., Eutectic of Japan Ltd., Exxon Chemical Japan Ltd., Ford Motor Co. Japan Ltd., Getz Bros. Co. Ltd., IBM Japan Ltd., Ikegai-Goss Co. Ltd., IPI Corp., ITT Canon Ltd., Japan Upjohn Ltd., Johnson Co. Ltd., Lederle Japan Ltd., LSI Logic, Marion Merrill Dow K.K., Mobil Sekiyu K.K., Nihon Millipore Ltd., Niigata Worthington Co. Ltd., Nippon Becton Dickinson Co. Ltd., Nippon BEE Chemical Co. Ltd., Nippon DuBois Co. Ltd., Nippon Motorola Ltd., Nippon Otis Elevator Co., Nordson K.K., Raychem K.K., Schering-Plough K.K., Showa Cabot K.K., Spraying Systems Co. Japan, Sumitomo 3M Ltd., Sumitomo Yale Co. Ltd., Teradyne, Thomas & Betts Ltd., Tonen Corp., Toyo Ekco Co. Ltd., Union Carbide Services K.K., Unitta Co. Ltd., Upjohn Pharmaceuticals Ltd., Walbro Far East Inc., Warner-Lambert K.K., and Yokogawa Hewlett Packard.

In addition, the following institutions provided significant financial support during one or more stages of the project: the Sloan School of Management; the Japan Foundation; the Japan-United States Education (Fulbright) Commission; the Department of Education (Fulbright-Hays Program); the Abdu-Nur Scholarship; and

the Association of American University Women.

For their kind help and suggestions in Japan, I wish to acknowledge E. Keith Henry, K. Ishibashi, Hiroya Koshiji, Ken Kusunoki, Sumiko Morita, and Atsuko Wakita. For their suggestions with various aspects of dealing with the data and editing the manuscript, I would like to thank Aline Sayer, Judy Kaplan, Debbie Simon, and Connie Procaccini. For their companionship and counsel in the computer lab, I owe a chuckle and debt of gratitude to Ray Faith, John Maglio, Scott McGuire, Ellen Quaadgras, Buck Shaw, and Jake Wetzel. Finally, Sharon Cayley and Tandeka Hicks deserve a special note of thanks for their encouragement and advice throughout the doctoral program.

It is my privilege to acknowledge the guidance of Professors Victoria Alexander, David Flath, Yori Oda, and John Willett, who all helped lay the groundwork for this research. I would also like to acknowledge the influence of the work of Dennis Encarnation, Mark Mason, Azumi Takata, and Yosutake Yagi.

I have accumulated numerous other debts during the course of this research that are less easily repaid. I wish to thank my friends and colleagues for their generosity and humor through the various ups and downs of this thesis: Yaichi and Yoko Aoshima, Anna Barkley, Debby Butler, Mary Lea Cox, Natarajan Dana, Varghese George, Theresa Greaney, Gail Honda, Linda Kira, Ken Kusunoki, Kentaro and Chiharu Nobeoka, Nong Chen, Monica North, Yasuhiko and Tomomi Ota, Davinder Purhar Bhowmik, S. Jun Roh, and Bill Tsutsui. I owe an especially great debt to Nate Charles who contributed significantly to the eventual completion of this work and without whose help I would not have been able to meet numerous deadlines. In Japan, I would like to thank Jun Yokokawa who provided enthusiastic support and constant encouragement.

Finally, I would like to thank my family. My grandmother, Gladys, Ewa, and my sisters, Lindsey and Amanda were unfailing in their encouragement and support. And it is with particular appreciation that I acknowledge the support of my parents, Patricia and Lawrence, to whom this book is dedicated.

**Applying institutional theory to
the study of the multinational enterprise:
parental control and
isomorphism among subsidiary personnel practices.**

The control and coordination of geographically dispersed activities has long been one of the critical issues facing multinational firms operating across national boundaries. A major challenge facing multinational firms lies in integrating organizational systems and routines that contribute to firmwide goals while remaining responsive to local organizational systems and routines that are necessary for the subsidiary's smooth operation in the host country. The subsidiary thus faces frequently conflicting pressures from both the parent firm and the local environment (Westney 1989, 1993, Rosenzweig and Singh 1990).

This research compares the personnel practices of American manufacturing subsidiaries in Japan to those of their parent firms. These radically different employment environments highlight the differences and similarities in parent and subsidiary personnel practices and raise the issue of how parental control and local environmental pressures interact. This thesis focuses on the relationship between the parent and the subsidiary firm and the similarity between them in terms of personnel practices, as seen from the subsidiary's point of view, and focuses on two very specific research questions:

1. Is there a relationship between parental control over the subsidiary and similarity between the parent and subsidiary in certain personnel practices?
2. Under strong parental control, are some categories of personnel practices likely to be similarly emphasized in the parent and subsidiary? The specific categories this dissertation analyzes are recruiting, performance appraisal, and training.

To explore the relationship between parental control over the subsidiary and similarity of parent and subsidiary practices, I surveyed 55 of the 171 American manufacturers in Japan meeting the following sample criteria of being firms:

- in manufacturing
- with operations located in Japan
- with over 100 employees in its Japanese operations
- with an American parent with 50% or more equity in the subsidiary.

Theoretical framework.

Through the 1970s and 1980s, the multinational firm has been analyzed within the framework of local responsiveness and global integration, where local responsiveness refers primarily to host country government demands and customer tastes, and where global integration refers to coordination of activities to capitalize on multinational customers, multinational competition, high levels of technology and investment intensity, and economies of scale and scope (see Prahalad and Doz 1987: 253 for a summary). In the past this integration-responsiveness framework has been applied to businesses, functions, and tasks. This thesis extends the integration-responsiveness framework one level of analysis deeper into the organization to analyze specific practices within tasks.

Westney (1989) reframed the tension involved in the integration-responsiveness framework in the context of institutional theory. As a formal theory of organizations, institutional theory seeks to explain the structure and behavior of organizations in the context of the social structure of their environments. Institutional theory examines why organizations adopt certain similar structures and processes (see Meyer and Rowan 1977, DiMaggio and Powell 1983, Scott 1987a) and focuses on the reinforcing role played by other organizations in the environment (Westney 1989). Westney suggests that institutional theory provides a way of comparing the conflicting pressures toward integration and responsiveness in terms of the social structural pulls on the subsidiary.

Comparing American parent firms to their subsidiaries in Japan has the advantage over comparing American parent firms to subsidiaries in other western

locations because it juxtaposes national practices of very different content and orientation yet fairly similar legitimacy, given that Japanese practices are generally viewed to be as successful as American practices. Thus, comparing the American subsidiary in Japan to its parent in America highlights the contrasting pulls between the parent and the local environment because the practices are so different in these two environments that no organization can equally reflect both environments simultaneously.

Goals of the thesis: measuring isomorphic pressure and relating it to isomorphism.

DiMaggio and Powell (1983:150-4) suggest three mechanisms through which organizations seeking legitimacy conform: 1) coercive isomorphism, 2) normative isomorphism, and 3) mimetic isomorphism. This thesis draws on coercive isomorphic pressure¹ to illuminate the relationship between the parent and subsidiary and to develop another concept of isomorphic pressure, "mandated isomorphic pressure." Mandated isomorphic pressure addresses organizational pressure on the subsidiary from the parent firm. Examples of mandated isomorphic pressure include parental control over the subsidiary through budgeting, goal-setting, task and structural interdependence, and the presence of expatriate managers in the subsidiary, as well as socialization of the subsidiary managers.

This thesis proposes several ways to operationalize mandated isomorphic pressure (parent firm control) and develops a measure of isomorphism (similarity) among practices, using the criteria that the practice be strongly emphasized in the parent and similarly emphasized in the subsidiary.

I first set out to operationalize mandated isomorphic pressures in terms of: A)

¹Coercive isomorphic pressure is the formal and informal pressure exerted by one organization on another organization. Examples of coercive isomorphic pressure include legal and technical requirements, such as legislation, budgeting cycle, financial reportage, and so forth.

parental control of the subsidiary through means such as HRM policy, B) control by means such as budgeting, C) control by ends such as performance outcomes, D) control through task and structural interdependence, E) control by ownership, and F) control by leadership: nationality of top management and socialization of top subsidiary management. I employ a survey instrument that incorporates several indicators for each type of mandated isomorphic pressure. I next create composite measures by combining them into measures based on the criteria of theoretical and statistical coherence. I then look at these isomorphic pressure composites in the context of isomorphism among parent and subsidiary practices.

In this dissertation, I compare the personnel practices of American manufacturing subsidiaries in Japan to those of their parent firms in America, drawing on Nelson and Winter's definition of routines as the "predictable behavior patterns of firms."² I focus on the routines/practices involved in recruiting, training, and performance appraisal and their relationship to parental control over the subsidiary.³ The underlying premise here is that isomorphism comes into the life of the organization not just in how organizations structure themselves but also in how they actually behave and carry out routines. Institutional theorists would argue that, in fact, many routines are specific to organizations, but many others are very similar across organizations.

Subsidiary heads were asked to evaluate the emphasis on each of 63 personnel practices in both the parent and the subsidiary, on a 0-to-7 scale, with zero meaning

²Routines as defined by Nelson and Winter (1980) are referred to in the human resource management literature as practices, where practices are what organizations do in a routine way.

³Tremendous discontinuity exists between the organizational activities observed in practice and those codified in organization charts and formal goal statements. Accordingly, isomorphic pressures have crucial consequences for organizations. First, organizations incorporate elements which are legitimated by other organizations rather than by a process of testing their efficiency for the organization in question. Second, organizations employ external or superficial assessment criteria to define the value of structural elements. Third, dependence on externally fixed institutions reduces turbulence and maintains stability. Accordingly, Meyer and Rowan (1977) suggest that organizations which incorporate institutionalized myths are more legitimate, successful, and likely to survive.

the firm does not employ that practice at all, and 7 meaning the firm very strongly emphasizes that practice. I selected the CEO or the vice-president as the person to evaluate the practices of both the subsidiary and parent firm, since subsidiary top management is the most likely to be able to evaluate both the parent and the subsidiary.

The criteria used for measuring isomorphism or similarity between parent and subsidiary emphasis on personnel practices were: 1) that the personnel practice was strongly emphasized in the parent firm,⁴ and 2) small differences in practice emphasis between parent and subsidiary were defined as difference scores of less than one. The dissertation looks at the relationship between parental control and similarity between parent and subsidiary emphasis on practices, focusing on isomorphism within each multinational firm and subsidiary. It examines the question, "As the parental control increases across the sample, does the subsidiary emphasis on that practice become more similar?"

Overview and organization of the thesis.

This thesis aims to extend the integration-responsiveness framework in several ways. First, it extends the framework by taking the level of analysis down from businesses and functions (Bartlett and Ghoshal 1989: 97) to the level of practices or routines within tasks by examining the practices within the recruiting, training, and personnel performance appraisal tasks. It may be that these pressures for integration and responsiveness are most evident in how organizations actually behave and carry out routines.

Second, this thesis extends the integration-responsiveness framework to compare social pressures on the subsidiary toward both integration with the parent

⁴This formed the basis for inclusion in the sample to be analyzed. Any practice that received an emphasis rating of less than 4 on a scale of 0-7 in a given parent firm, indicated that the practice was not strongly emphasized in the parent firm and caused that firm to be excluded from the analysis.

firm and responsiveness to local firms in the host country. Within the context of institutional theory, it explores and operationalizes measures of parental control toward integration in order to empirically examine the relationship between parental control and similarity of parent and subsidiary practices.

Finally, this thesis proposes several ways to operationalize mandated isomorphic pressure (parent firm control) and develops a measure of isomorphism (similarity) among practices, using the criteria that the practice be strongly emphasized in the parent and similarly emphasized in the subsidiary. It further examines the relationship between parental control and similarity between parent and subsidiary emphasis on practices.

The thesis concludes by mapping specific personnel practices in the integration-responsiveness framework and suggests how American multinational manufacturers might best configure recruiting, training, and performance appraisal activities in their Japanese subsidiaries.

**Chapter 2:
Placing the multinational firm
in the context of institutional theory.**

This thesis focuses on the multinational enterprise (MNE) in the context of two often conflicting pressures: 1) the pressure for local responsiveness, and 2) the pressures for global integration. This section first traces the evolution of the integration/responsiveness framework in the literature on the multinational firm through the 1980s. In the process, it differentiates several types of multinational firms according to their response to these two pressures. It also traces the evolution of literature on strategic control by the parent over the subsidiary. I then go on to place the conflicting pressures on the subsidiary toward global integration and local responsiveness in the context of institutional theory. Institutional theory provides a framework for comparing the relationships between the headquarters and subsidiary and between the subsidiary and its local environment. As a formal theory of organizations, institutional theory seeks to explain the structure and behavior of organizations in the context of their environments. The second part of this chapter thus will explore the MNE in the context of institutional theory in terms of: the conflicting isomorphic pressures on the subsidiary from the parent firm and the local environment, areas of the organization most affected by isomorphic pulls, and practices as indicators of the effects of isomorphic pulls.

The integration-responsiveness framework provided the dominant paradigm for analyzing MNEs in the 1980s (Doz and Prahalad 1993). According to this paradigm, in crossing national boundaries, multinational firms face pressures for both local responsiveness and global integration. The forces for local responsiveness stem from the multinational firm's need to address government and customer needs in host country environments in which its subsidiaries are located. Doz and Prahalad (1984:

56) note that needs for national responsiveness usually stem from a diversity in market conditions and in social and political environments found in the firm's various countries of operation. Such needs for responsiveness may range from diversity in consumer tastes, distribution channels, and advertising media between countries--as in the food industry--to extensive government regulations and constraints, as in the telecommunications equipment industry (Doz and Prahalad 1984: 56). Additional pressures for local responsiveness include differences in distribution channels, the availability of substitutes and the need to adapt, market structure, and host government demands (Prahalad and Doz 1987). With regard to local responsiveness, Bartlett and Ghoshal (1989: 9) suggest that the most important force for localization has been the reactions of national governments that see their markets flooded by the products of global producers.

The forces for global integration, on the other hand, are seen to stem from the need of the firm to capitalize on multinational customers, multinational competition, technology and investment intensity, and economies of scale and scope. Prahalad and Doz (1987: 253) posit that firms exploit various interdependencies across businesses, based on vertical integration and shared technology, as well as on logistics, host governments, distribution, and marketing. These interdependencies flow both across product groups and across countries within the same product group. However, they are not all equally important and are imposed by a number of sources (i.e. vertical integration, distribution channels, core competencies, emerging markets, qualitative differences), making the critical interdependencies difficult to identify. Theodore Levitt suggests that technological, social, and economic developments over the last two decades have combined to create a unified world marketplace in which companies must capture global scale economies to remain competitive. In contrast to these converging tastes, impediments to global integration include the additional costs of

supplying markets from a central point, especially when lead times are so short, or market service requirements so high, that scale economies are outweighed by other costs.

Evolution of the integration/responsiveness framework in the 1970s and 1980s.

Early research on the multinational enterprise focused on economic and competitive models of the MNE, building on the seminal works of Hymer (1960) and Vernon (1966). The focus of economists was on why MNEs exist and why they go abroad, not on how they are best organized. Only a few early scholars developed and identified the essential tension between differentiation and unity in managing multinational enterprises (e.g., Perlmutter 1969). Following the development of contingency theory, empirical research on the MNE began to focus on the organization and management processes of the MNE. In particular, Bartlett, Doz and Prahalad laid the foundations for the study of organizational processes and capabilities in the MNE in their doctoral work at Harvard Business School under Ray Vernon.

Bartlett and Ghoshal's work. Bartlett (1979), in his doctoral dissertation at Harvard Business School on multinational structural evolution, analyzed how different functions were affected by pressures for integration and responsiveness by comparing the management systems and processes used in a sample of companies in industries differently affected by global integration and national responsiveness demands. Bartlett then considered how what he called the "institutional heritage" of a firm constrains the development of new capabilities and constitutes a form of "organizational inertia" that top management must take into consideration (Bartlett 1981). Ghoshal (1986) added a detailed analysis of innovation processes, stressing

the existence of different patterns of interactions in the innovation process between affiliates and headquarters and among affiliates.

Bartlett developed a series of Harvard Business School teaching cases studies (e.g. Corning Glass Works) and followed this by a major research project with Sumantra Ghoshal that culminated in the highly influential book, Managing Across Borders. This book places various types of MNEs in the context of the integration-responsiveness framework. Further, they use the integration/responsiveness framework at the level of businesses, functions, and tasks within functions (see Bartlett and Ghoshal, 1989: 97). Bartlett and Ghoshal (1989) propose that roles and responsibilities in the transnational be differentiated by business, function, and even by task. Within a given business, they extend the framework to functions which may include R&D, manufacturing, marketing, and sales. Then within marketing they extend the framework to tasks which may include product policy, advertising, pricing, distribution, or promotion.

Bartlett and Ghoshal (1989) characterize the responses to forces for integration in the MNE in terms of both structural adaptation and cognitive responses.⁵ They suggest that headquarters-subsidiary relationships can be unified across functions and products by creating a "matrix (of these products and functions) in the minds of the managers" (Bartlett and Ghoshal 1989). Bartlett and Ghoshal refer to this central integrating mechanism as a shared vision, a "state of mind" in which managers balance the different dimensions of area, product, and function each time they make a decision (Bartlett and Ghoshal 1990) to view the organization as a whole.⁶ They argue that it

⁵With regard to structure, Bartlett and Ghoshal (1989) propose that configuration of assets and capabilities in the MNE be dispersed, interdependent, and specialized. They suggest that roles and responsibilities of the various subsidiaries be differentiated by business, function, and even by task. The result is that each business unit holds a different position on the integration/responsiveness grid and has different organizational needs and roles.

⁶Traditional approaches to coordination were "architectural," a search for the right "structure, product, geography, or matrix" (Doz, Bartlett and Prahalad 1981, Mathias 1978, Prahalad 1980).

is the role of top management to develop a managerial mentality throughout the company to encourage individual managers to share their corporate vision (Bartlett and Ghoshal 1989). This shared perspective on the part of upper-level managers at headquarters and the subsidiaries is cultivated through shared socialization and rotation through various parts of the MNE and is more important in shaping the MNE than is formal structure.

Multinational, global, and international responses to forces for integration and responsiveness.

Bartlett and Ghoshal (1989) place archetypal European multinationals, Japanese multinationals, and US multinationals on the integration-responsiveness grid to develop a typology of MNE forms: the multinational, the global and the international firm. The European MNE, the "multinational" firm, is characterized by decentralized and nationally self-sufficient subsidiaries, where the role of the overseas subsidiaries is to sense and exploit local opportunities. Thus, the subsidiary's goal is to optimize the situation in its local environment, and its role is local and limited to activities in its host country.

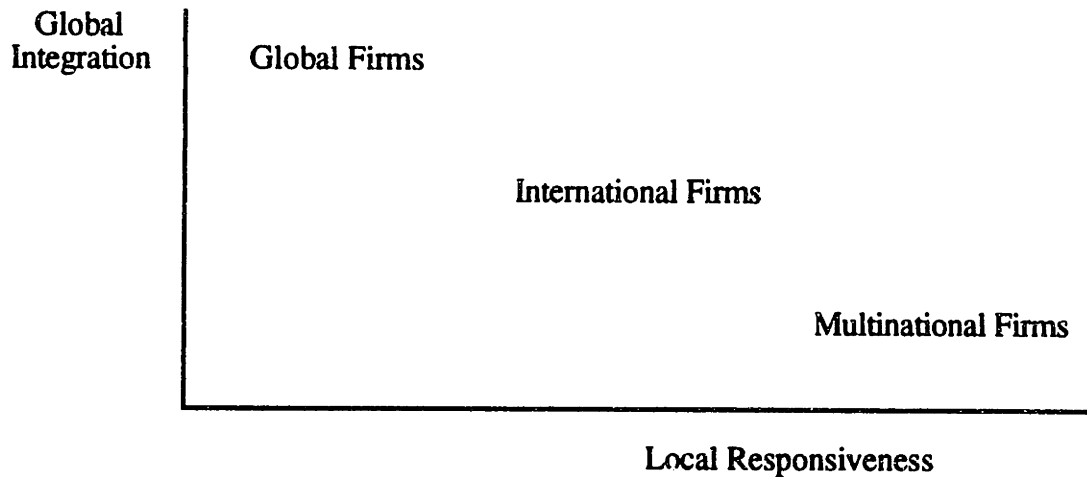
The second type of multinational firm, the "global" firm, representing many Japanese multinationals, is characterized by centralization and global scaling in the MNE's configuration of assets and capabilities. In the global firm, the role of overseas subsidiaries is to implement parent company strategies. Here, subsidiaries are usually limited to sales and service and are used to reach foreign markets in order to build global scale. The subsidiaries are not particularly locally responsive.

The third type of multinational firm, the "international" firm, broadly represents American firms and is characterized by centralizing sources of core competencies and decentralizing other assets and capabilities. The role of the overseas subsidiary in the international firm is to adapt and leverage parent company

competencies. Again, the subsidiary' role is local, and limited to activities in its own environment.

Figure 2.1

Multinational, global and international firms
within the integration-responsiveness framework



These three types of firms are differentiated in the ways they address the needs for local responsiveness and global integration. With regard to addressing needs for local responsiveness, the multinational model allows firms to be sensitive to local market differences and national political demands. To a lesser extent, the international model provides an effective means for companies to transfer knowledge and skills from the parent company, and adapt them to local needs. At the other end of the spectrum, the global firm is not very well suited to addressing needs for local responsiveness, as most strategic assets, resources, responsibilities, and decisions are centralized in headquarters.

With regard to global integration, on the other hand, the global organization is most likely to facilitate the development of coordinated strategies and to capture global scale efficiencies. The international firm depends on a central process for creating and exploiting innovation. The multinational firm, on the other hand, is not very well

suited for addressing needs for global integration.

Thus, in considering the balance between global integration and local responsiveness, the multinational firm assumes that tailoring products and strategies to individual national markets is key. The global firm allows local operations to choose from a menu, set by headquarters, of products and processes, perhaps modifying them in minor ways to suit local conditions. The international firm operates under the assumption that cost and quality advantages of global efficiency are expected to provide sufficient value that customers will accept standard products that may not take into account their specific tastes.⁷

Bartlett and Ghoshal (1989: 115) suggest linking the resources and capabilities of diverse worldwide units throughout the company, at both the HQ and subsidiary level, to create and implement innovations on a joint basis.⁸ Bartlett and Ghoshal (1989: Chap. 6) see the roles of overseas operations in terms of differentiated and specialized contributions to the MNE, differentiated along high internal competencies and strategic market importance, so as to allow the subsidiaries to provide input into the formulation and communication of the overall firm strategy.⁹ At the extreme, each

⁷Hedlund (1986) proposed the development of strong interdependencies among the units within the organization in which all units of the MNE pursue an equilibrium between integration and responsiveness.

⁸Bartlett and Ghoshal (1989: 115) suggest multiple innovation processes to facilitate learning and manage innovation in worldwide companies. One process relies on locally leveraged innovations and capitalizes on the resources and entrepreneurship of individual national subsidiaries, leveraging them to create innovations for exploitation on a worldwide basis. Philips is an example of using local innovations efficiently by empowering local management and involving them in corporate decision-making processes. Philips also integrates technical and marketing functions within each subsidiary. Another process relies on central innovations to overcome the risk of needless differentiation and the "not invented here" syndrome inherent in local innovations, at the risk of market insensitivity. Matsushita provides an example of making central innovations effective (Bartlett and Ghoshal 1989: 121), using multiple linkages to gain subsidiary input and link development to market needs.

⁹Bartlett and Ghoshal categorize complementary subsidiaries into 1) strategic leaders, 2) contributors, 3) implementers, and 4) black hole subsidiaries, along the various dimensions of product, technology, function, and market expertise. First, strategic leaders pursue high internal competence in a strategically important market. Second, contributors apply local benefits and apply them to broader worldwide operations in which competence is high but the strategic importance of the market is limited. Third, implementers provide just enough competence to maintain their local operations in a nonstrategic market. Finally, black holes refer to strategically important markets in which a worldwide company has minimal capabilities.

subsidiary is at the same time a global coordinator of activities for one product, and a more peripheral agent for local distribution of other products coordinated elsewhere in the MNE. Examples of firms facilitating transnational innovation through means such as these include Ericsson, Procter and Gamble, and NEC, which are characterized by: 1) the interdependence of resources and responsibilities, 2) inter-unit integrating devices, and 3) national competence, and 4) worldwide perspective.¹⁰

Building on the idea of different patterns of interactions in the innovation process between affiliates and headquarters and among affiliates (and on a data set constructed by Ghoshal as part of his work on the transnational), Ghoshal and Nohria (1990) undertook a more general analysis of the MNEs as a differentiated network (Ghoshal and Bartlett 1990). Nohria and Ghoshal (1990) argue that the stylized (M-Form) model¹¹ of complex organizations does not provide an effective analytical

¹⁰Impediments to transnational innovation include administrative heritage (Bartlett and Ghoshal 1989), a firm's cognitive capabilities, different business logics, and repetition of old recipes for strategies which no longer work (Prahalad and Doz). Bartlett and Ghoshal (1989: 143) set out the obstacles to converting a unidimensional organization into a multidimensional one as falling into three additional categories: strategic barriers, organizational barriers, cultural barriers. Strategic barriers evolve from the fact that changing management perspectives and capabilities will probably be perceived as threatening the responsibilities of the core group on which the company's success has depended. Top managers may regard any challenge to their decision-making power or dilution of their resource support as a direct assault on the firm's distinctive strategic capability. Second, organizational barriers come about because historically dominant management groups have line responsibilities and represent a barrier to the development of counterbalancing management perspectives and capabilities. Furthermore, an organization's formal systems are normally structured to meet the needs of the line organization. This makes it difficult for newly established management groups to gain access to information in a form that allows them to make appropriate analyses, or to have significant influence on the planning or central processes. Bartlett and Ghoshal (1989) stress legitimizing diverse perspectives and capabilities through providing access and ensuring influence. Providing access entails allowing managers with new perspectives and capabilities to relate them appropriately to the company's objectives, interests, and priorities. Ensuring influence involves ensuring that new management has the organizational clout to influence decisions, such that legitimacy and access are backed by formal organizational power. Third, cultural barriers range from corporate culture to national culture. Finally, administrative heritage can provide the strongest obstacle to organizational movement toward multidimensional coordination. Administrative heritage includes the role of leaders, the impact of national culture, and the influence of organizational history.

¹¹Chandler's description of the M-form organization still serves as the model of complex organizations. In this model, a complex organization consists of a number of more or less self-contained, semi-autonomous divisions, grouped according to some set of criteria such as product lines, technologies, distribution channels, geography or some combination of these under a corporate administrative structure. The distinguishing structural characteristics of the M-form, as described by Oliver Williamson, for example, are (1) the responsibility for all operating decisions is assigned to

framework for understanding the structural complexities of today's MNEs (Nohria and Ghoshal 1989, 1990). One problem is that the M-form model does not account for potential sources of variation in dispersed divisionalized firms, particularly the diversity of strategic missions across subsidiaries, even within a single business line. Applying network theory to MNEs, they posit that the nature of interaction and the intensity of information flow between subsidiary and head office and across subsidiaries reflect the strategic missions assigned to various units and is manifest in the pattern and intensity of information flow (Ghoshal and Nohria 1990). Thus, patterns of information flow predict the cognitive orientation of managers (which depends on the information infrastructure to which they have access), the strategic consensus process (i.e., where are the sources of tension in the firm, and who is involved in resolving this tension), and the relative power balance throughout the MNE as to who allocates resources.

Prahalad and Doz's work. Prahalad (1975) began a line of research centered on the common theme of strategic processes and organizational capabilities in MNEs in his doctoral dissertation at Harvard Business School.¹² Prahalad's early research focused on the processes by which the managers of a single business perceived changing environmental demands and responded to them by redirecting the attention of others managers, refocusing the strategic direction of the firm, and realigning power and influence processes within the MNE, consistent with new environment conditions. Doz, another Harvard Business School D.B.A., analyzed the processes used to manage the tension between pressure for globalization/integration and pressure for responsiveness to host government industrial

divisions and (2) the staff attached to the general office is primarily concerned with monitoring division performance, allocating resources among divisions, and making strategic plans.

¹² Prahalad's thesis focused on strategic processes in a multinational corporation.

policies, by comparing several companies and several businesses in each company (Doz 1976, 1979). Doz (1979, 1980) then analyzed how differences in competitive positions between firms in the same industry affected their response to the tension between integration and responsiveness.

In a series of articles in 1981, Prahalad and Doz examined the changing nature of the strategic control process between parent firms and subsidiaries. They defined strategic control as the extent of influence that a head office has over a subsidiary concerning decisions that affect subsidiary strategy (Prahalad and Doz 1981).¹³ They also set out the concept of organizational context, developing the notion that an organization is an aggregation of four orientations--cognitive, strategic, power, and administrative (Prahalad and Doz 1981: 9).¹⁴ Prahalad and Doz (1981: 15) argue that effective headquarters influence in shaping a global competitive strategy requires not only shifts in the thrust of resource allocation choices but also changes in cognitive and strategic orientations. Doz, Bartlett, and Prahalad (1981) classified four modes of administrative solutions to managing tensions between integration and responsiveness : 1) substantive decision management (in which top management ensures that management groups representing each of the critical decision perspectives is strong enough to develop and advocate its particular viewpoint) 2) substantive decision arbitration (the delegation of important balancing responsibility to trusted arbitrators), 3) temporary coalition management (influencing the composition of decision-making

¹³Some typical decisions that reflect the strategy of a subsidiary are: choice of technology, definition of product market, emphasis on different product lines, allocation of resources, expansion and diversification of subsidiary operations, and a willingness to participate in a global network of product flows among subsidiaries (Prahalad and Doz 1981: 6).

¹⁴Prahalad and Doz suggest that organizational structure is a cross between a pure organizational form and a matrix form, what they call a multifocal or "Band-aid" approach (1987: 173, Doz, Bartlett, and Prahalad, 1981). Thus, all of these organizational forms are organized to respond along a number of dimensions, such as functions, products, and geography, to name a few. All are tightly coupled through closely coordinated strategies and communication links in order to facilitate quick response to change in the global environment. Prahalad and Doz (1984) suggest that appropriate coordination requires something more than mere "architecture: a search for the right structure--product, geography, or matrix" (1984: 58).

groups to maximize legitimacy, differentiation of information, and clout to enforce its decisions), and 4) decision context management (in which management tries to influence parent-subsidiary relationships through informal structures, strong internal value systems, strong corporate identity, career development, and a set of beliefs which defines norms through interpersonal interactions). The first two solutions aim at building into the organization the capability for top management to capture the tensions in the critical environment and manage them. The third is a decision-making process that involves the development of coalitions and their skillful management from one decision to the next.

Doz and Prahalad (1981) then began to develop the basis for differentiating types of strategic control, as put forth later in their book, Multinational Mission: Balancing Local Demands and Global Vision (see 1987: 186), in terms of three mechanisms for parental control over subsidiaries: 1) data management mechanisms (which structure and provide data that are pertinent to the global performance of the company,¹⁵ 2) "managers' management mechanisms" (which shift the expectations of and their perceptions of self-interest from subsidiary autonomy to international business performance;¹⁶ 3) conflict resolution mechanisms (which resolve the

¹⁵Doz and Prahalad (1984: 55-72) suggest that data management systems allow the MNE to control which information is gathered systematically by the members of the organization; how such information is aggregated, analyzed, and given a meaning; how, in which form, and to whom it circulates; and how it is used in major decisions. Doz and Prahalad (1984) propose that data management tools include not only information systems, but also measurement systems, strategic planning processes, and resource allocation procedures. Information creates a dual focus: accounting data, as well as strategic data, must be aggregated both by country and by product (or activity) to allow to bundle and unbundle activities for analytical purposes and to support both the perspective of integration (a portfolio of countries within a business) and that of responsiveness (a portfolio of businesses within a country). Furthermore, the assumptions underlying how information is obtained, aggregated, structured, and presented must be understood and agreed upon, so that differences between cognitive maps reflect the actual ambiguity of choices, not the fuzziness of information. Such systems maximize the efficiency of these data management tools by emphasizing the visibility of the performance of individual businesses, the business's performance vs. managers' performance, strategic performance vs. financial performance, and core competencies as a complement to business measurement and planning (1987: 235).

¹⁶"Managers' management tools" (Doz and Prahalad 1984: 55-72) are a form of normative control in which the purpose is to set norms and standards of behavior as well as personal objectives that are consistent with the desired strategic direction. Such tools work both directly--through their actual

conflicts triggered by the necessary tradeoffs among national subsidiaries, which must be made since effective global strategies usually mean that some subsidiaries are likely to benefit more than others).¹⁷

Prahalad and Doz's focus on strategic control toward global integration culminated in their suggesting in their book, Multinational Mission (1987), that global integration be achieved through a combination of formal structure and organizational processes such as administrative tools and decision-making culture. They propose that the primary purpose of organizational processes --formal structure, administrative tools, decision making culture -- is to 1) influence the mind-set or the cognitive orientation of managers, 2) to legitimate a currently dominant coalition of managers representing a certain strategy that is pursued, and 3) to represent the authority structure and power to allocate resources. In terms of implementing a shared mind-set, Prahalad and Doz suggest strategic control involving the assignment of different strategic missions to subsidiaries depending on the nature of competitive interaction at a given time. The key for strategic control is to have the most important subsidiaries share a common vision with headquarters.

Prahalad and Doz provide an explicit map of the various business and industry

impact on managers--and indirectly--through the precedents they set and the meanings they assign to specific situations and choices. Prahalad and Doz (1984) build on this interdependent state of mind by suggesting that firms promote visibility of the performance of individual businesses, business's performance vs. managers' performance, strategic performance vs. financial performance, and core competencies to complement business measurement and planning.

¹⁷Conflict resolution tools structure how key processes actually work. Among such tools figure the creation of specialized coordinator's roles, the clear assignment of responsibilities in the decision processes, and the provision of specific channels for preparing decisions, such as, committees, task forces, study groups, business teams, and so forth. Cognitive maps in use clearly differ between headquarters and subsidiary managers, as well as between executives from different functions, different cultures, and diverse experiences (Prahalad, 1976; Doz 1977, 1979). "Managing headquarters-subsidiary relationships involves balancing forces that call for international integration of operations and centralization of decisions against forces that call for national responsiveness and subsidiary autonomy in the making of strategic decisions" and generally, needs for responsiveness are most accurately noted by the subsidiary managers, whereas needs for integration are usually more acutely perceived by headquarters executives (Doz and Prahalad 1984: 55-56). By imposing a framework creating multiple steps in decision making, time horizons, and deadlines, these processes create some pressure for convergence and also the channels for such convergence to take place.

characteristics using the global integration-local responsiveness framework, simultaneously considering all factors that contribute to the pressure for local integration.¹⁸ They argue that global firms organize around global businesses and characterize global businesses or product groupings as covering more than a product line but less than an industry with related product markets, technologies, tasks, customers, or cost structures. They further suggest that subsidiaries' roles vary in terms of the criticalness of the area market, the product, and the functional departments involved, and thus see the role of HQ to include: strategic control (efficiency in the implementation of a strategy), strategic change (changing the orientation of a business from local responsiveness to global integration or vice versa), and strategic flexibility.¹⁹

Mapping businesses in terms of their collective pressures for integration and responsiveness recognizes the need for integrative optimization between multiple and often conflicting pressures in a business.²⁰ Prahalad and Doz (1987) see it as more

¹⁸Prahalad and Doz (1987) distinguish between global business and global competition (global business being a set of related product markets and tasks viewed along the dimensions of cost structures, technologies, and customers, and global competition being the firms in those businesses), and suggest that global competition is not about cost reduction per se, but rather about managing global cash flows. Firms manage these cash flows by managing costs (through factor costs, exchange rate advantages, scale advantages, and differentiated cost of capital) as well as managing price (through market structure, distribution and brand presence, and product family). Prahalad and Doz thus set out the imperatives of global competition as: building a strategic infrastructure of manufacturing and marketing, assessing the strategic intent of competitors, and reexamining implicit management concepts such as the value of market share and the methods of resource allocation.

¹⁹Prahalad and Doz (1987) predict that product groupings high on global integration and low on local responsiveness (e.g. semiconductors) will be run on a worldwide basis by most firms participating in that business. On the other hand, product groupings high on local responsiveness and low on global integration (e.g. processed foods) are likely to be run with significant local autonomy. Finally, product groupings that are high on both dimensions (e.g. telecommunications, pharmaceuticals) may require a complex structure that accommodates the pressures of both integration and responsiveness characteristic of the global firm. They argue that global competition is not about cost reduction per se, but about the management of global cash flows. This combines both managing costs (factor costs--raw material, labor, exchange rate advantages, scale advantages, and cost of capital) and managing prices (related to the structures of markets, the value of distribution and brand presence, the value of a product family).

²⁰Prahalad and Doz (1987) suggest a number of costs and benefits associated with managing interdependent businesses. The costs include: loss of top management focus on a single business or product line, loss of flexibility, less innovation, as well as the costs of coordination. The benefits associated with managing interdependent businesses include: cost reduction and increased control over value-added activities, technological integrity, sustaining a global infrastructure, more accurately

important to study the process of balance across seemingly conflicting demands than in the context of single elements of the business. They then use the integration-responsiveness framework to chart the changing nature of a business by evaluating shifts in the relative balance among the forces that contribute to the integration and responsiveness needs and their impact on various key functions within a business (such as R&D, manufacturing, or marketing). They propose analyzing management systems in a MNE, and in its various countries of operation, functions, and businesses to assess whether these management systems form a context consistent with external demands, given business conditions and competitive positions.

Finally, Doz and Prahalad (1988) focus attention on the importance of organizational capabilities in the process of reconceptualizing the basis for global competitiveness away from resource deployment to skill development and leverage (Hamel and Prahalad 1990). Prahalad and Doz (1987: 259) suggest that the dimensions of strategic capability include: 1) strengthening information-processing capability, 2) creating a differentiated management system, 3) managing strategic change, 4) managing innovation, 5) establishing pivots, and 6) maximizing the quality of the executive process. Subsequently, the building blocks of the organization include: 1) multiple advocacy processes, 2) a fluid power structure that allows for challenging the existing logic of the system, 3) a certain legitimacy to dissent and challenge the party line, and 4) a certain discipline in the organization for due process to work. Prahalad and Doz (1987) propose that process tools include specialized coordinators' roles, the clear assignment of responsibilities in decision processes, and the provision of specific channels for preparing decisions in committees, task forces, study groups, business teams, and so forth. By imposing a framework creating multiple steps for developing decisions, time horizons, and deadlines, these processes

assessing nature of competition, and bargaining leverage with host governments.

create some pressure for convergence as well as the channels through which such convergence may take place.²¹

Multinational Enterprises (MNEs) in the context of institutional theory.

Westney (1989) reframed the tension involved in the integration-responsiveness framework in the context of institutional theory. As a formal theory of organizations, institutional theory seeks to explain the structure and behavior of organizations in the context of their environments. Institutional theory examines why organizations adopt similar structures and processes (see Meyer and Rowan 1977, DiMaggio and Powell 1983, Scott 1987a) and focuses on the reinforcing role played by other organizations in the environment (Westney 1989). Building on the notion of isomorphic pressures that cause an organization to tend to resemble other organizations in its environment (DiMaggio and Powell, 1983), institutional theory offers a framework in which to analyze the MNE in the context of potentially conflicting environmental pulls.

Westney (1993) asserted that because MNEs span national lines they are likely to be subject to a variety of different and potentially contradictory isomorphic pulls in the different environments in which they operate. Westney suggests that institutional theory provides a way of comparing the conflicting pressures toward integration and responsiveness in terms of the social pulls on the subsidiary.

²¹Prahalad and Doz include as impediments to control: historical evolution of the HQ-subsidiary relationship, HQ's lack of understanding of the skills necessary for managers, conflicting agendas on the part of joint venture partners or host governments, and lack of loyalty on the part of local managers. Prahalad and Doz (1987: 217) cite the impediments to change as falling into three categories: perception lags, action lags, and the role of senior managers in complex organizations. Perception lags evolve from organizational fragmentation, multiple business logics, and replication of past success recipes. Action lags come about from power fragmentation among operations management, top management power, and the administrative infrastructure, as well as from defense routines. Finally, the role of senior managers should include: strategic control--efficiency in the implementation of a strategy, strategic change; changing the orientation of a business from local responsiveness to global integration or vice versa; and strategic flexibility.

Westney points out that institutional theory focuses less strongly than the traditional integration-responsiveness framework on parental choices of strategy or subsidiary choices of strategy and more on the process of environmental pulls.²² Local responsiveness has tended to refer to responding to government requests or local customer requests, and has subsequently focused on the nature of the firm's strategies in configuring the value chain in the host country and the nature of the firm's products in terms of the host market. In contrast to the strategic/political rationality underlying the integration-responsiveness framework and related contingency theory, institutional theory focuses on a social rationale.

Institutional theory provides a more complex lens to understand the organizational pulls on the subsidiary. The integration-responsiveness framework has focused its discussions on the implications for the location of key activities, the locus of strategic decision-making, and on the roles of expatriate and local managers (e.g., Prahalad and Doz 1987, Bartlett and Ghoshal 1989). Institutional theory moves the focus from strategic choices by the parent to the actual organizational processes of subsidiary and parent, and seeks to explain the structure and behavior of these organizations. Institutional theory focuses on the specific institutional context in which the organization is embedded, while the integration-responsiveness framework focuses more on whether the environment is "high" or "low" on a list of environmental parameters (reflecting its basis in the contingency theory of the late 1960s and 1970s).

The integration-responsiveness framework, as it has been developed in the past, has tended to refer to economic forces on the integration dimension and political forces on the responsiveness dimension, making it difficult to compare these pulls on the subsidiary. In focusing on organizational structures and processes to address

²²The subsidiary may not be completely aware of these processes, any more than the parents probably are.

pressures for both local responsiveness and global integration, institutional theory provides similar dimensions for comparing the subsidiary both to its parent and to other organizations in the local environment. In this way, it avoids the mixed metrics of political pressure, strategy, and management choice competing against each other in the integration-responsiveness framework.

This remainder of this chapter explores institutional theory in terms of: A) the conflicting isomorphic pressures on the subsidiary from the parent firm and the local environment, B) assumptions and consequences for the organization, C) practices as indicators of the effects of isomorphic pulls, and D) how MNEs highlight contrasting pulls from parent firm and local environments.

Brief overview of institutional theory.

As an open systems model of organization, institutional theory belongs to the organization-environment literature and seeks to explain the structure and behavior of organizations. Open systems models of organization posit that organizations are dependent on exchanges with outside parties (see, for example, Thompson 1967, Child 1972, Pfeffer and Salancik 1978, and Hannan and Freeman 1989). In particular, DiMaggio and Powell, among others, have studied how environmental forces influence organizational structures and processes. Institutional theory expands the open systems approach by suggesting that external social pressures and organizational norms shape organizations in terms of structures, processes, and belief systems.²³

²³Early open systems models of organizations emphasized the technical aspects of the organization and the resources required by an organization's production system to transform inputs into outputs. Organizational theorists viewed environments in terms of tasks, resources, transactions between competitors and exchange partners, and sources of information. Even technical environments viewed in terms of sources of information were interpreted narrowly to identify knowledge required in the production process--for example, predictability of inputs; knowledge of cause and effect relationships; analyzability of search processes. Technology was at the nexus and seen as shaping organizational structure (Scott 1992: 165). As such, technical environments included production and control

At the organization level, organization-environment theories propose that there are two types of organizational isomorphism: competitive and institutional. In part, competitive pressures drive structural change (Meyer and Rowan 1977, DiMaggio and Powell 1983). Competitive isomorphism arises out of efficiency pressures and other performance concerns such as profit, and cost and defect reduction. Organizations (particularly firms) are "selected" out, causing successful structures and processes to prevail and unsuccessful forms die out. Focusing on economic fitness, theories of competitive institutionalism such as population ecology assert that isomorphism develops because decision-makers learn appropriate responses and adjust their behavior to select non-optimal organizational forms out of that population of organization (Hannan and Freeman 1984).²⁴ Population ecology theory stresses that the market, the location of resources and customers, and the number and power of competitors are the principal elements in the environment. Technical environments thus shape organizations through competitive isomorphism or competition over scarce resources. Under competitive pressures, organizations adopt efficient structures and

technologies, patterns of interorganizational exchange, regulatory processes, and other factors that lead to relatively more or less efficient or effective forms of organization. These technical definitions environments are largely in keeping with a view that organizations are rational actors. Technical models of organizations viewed organizational structures as being shaped largely by their technologies, their transactions, and the power-dependency relations growing out of interdependencies arising from these transactions. In contrast, institutional theory and other predecessors such as contingency theory (e.g., Lawrence and Lorsch 1967), view various aspects of the organization as responses to environmental pressures and considerations.

²⁴Population ecology theory stresses that the market, the location of resources and customers, and the number and power of competitors, are the principal elements in the environment (see Aldrich and Pfeffer, 1976). Technical environments thus shape organizations through competitive isomorphism or competition over scarce resources.

Strategic choice arguments suggest that under competitive pressures, organizations adopt efficient structures and practices or risk failure to relatively better-adapted rivals. Institutional theory tends to stress other environmental elements such as the role played by normative beliefs and the sources of these beliefs. Further, institutional theory emphasizes the role of other types of actors, such as the state and professional associations, as well as the role of culture (Meyer and Rowan 1977).

In contrast to population ecologists, institutional theorists such as DiMaggio and Powell argue that selection pressures are not very potent in many or most organizational fields and that less efficient forms of organizations can and do persist (DiMaggio and Powell 1983: 157). Institutional theory further differs from other organization-environment theories in that adaptations are made in response to institutional environments and legitimacy-seeking rather than to competitive, resource, or technological pressures.

practices or risk failure to relatively better-adapted rivals.

In contrast, institutional isomorphism focuses on social rather than economic fitness, arguing that organizations adopt similar procedures not because these procedures are necessarily more efficient (DiMaggio and Powell 1983, Tolbert and Zucker 1983) or particularly suited to the task at hand (DiMaggio and Powell 1991, Meyer and Rowan 1991), but because they serve to "legitimate" the organization to the other organizations in its environment under conditions of uncertainty as to what is effective. The institutional environment refers here to the other firms in the same industry (firms in supplier, customer, and other related industries); professional groups and unions; and government institutions. Accordingly, institutional theory stresses environmental elements such as the roles played by legitimacy and normative beliefs and the sources of these beliefs, and emphasizes the role of other types of actors such as the state and professional associations as well as the role of culture (Meyer and Rowan 1977), rather than the role played by resource or technological pressures.²⁵

Organizations often conform to a set of institutionalized views or beliefs because they are rewarded for doing so through increased legitimacy, resources, and survival capabilities (Meyer and Rowan 1977). According to Meyer and Scott, organizational legitimacy refers to "the degree of cultural support for an organization--the extent to which the array of established cultural accounts provide explanation for its existence, functioning and jurisdiction, and lack or deny alternatives" (1983: 201).

²⁵In contrast to population ecologists, institutional theorists such as DiMaggio and Powell argue that selection pressures are not very potent in many or most organization fields and that less efficient forms of organizations can and do persist (DiMaggio and Powell 1983: 157). DiMaggio and Powell (1983: 147) state, "organizational change occurs as the result of processes that make organizations more similar without necessarily making them more efficient." Scott and Meyer (1991) maintain that organizational conformity to the institutional environment can even "simultaneously increase evaluation, resource flows, and therefore survival chances, and (at the same time) reduce efficiency." While there has been some debate about whether institutional or technical/competitive forces better explain change in organizations (Zucker 1989, Astley and Van de Ven 1983, Scott 1987b: Ch. 8), I see these two as complementary.

It is this legitimacy that accounts for the existence of particular forms of organizations (Tolbert and Zucker 1983) and the existence of specific structures in similar organizations (Rowan 1982, Tolbert 1985, Baron et al. 1986).

This legitimacy subsequently increases the survival chances of organizations by granting access to resources, as noted by Meyer and Rowan (1977):

Organizations are driven to incorporate the practices and procedures defined by prevailing rationalized concepts of organizational work and institutionalized in society. Organizations that do so increase their legitimacy and their survival prospects, independent of the immediate efficacy of the acquired practices and procedures.

A single powerful institution (such as the parent firm or the government in the subsidiary's local environment) can influence practices and procedures by defining given types of practices as rational and legitimate (Zucker 1983).

In addition, legitimacy facilitates relations with other organizations. Scott and Meyer (1991) note that adherence to procedural specification is one way in which stable organizational forms can be created and legitimated in areas where there is much conflict or disagreement within a given firm. To resolve internal disagreement, organizations will often turn to other organizations as expert examples. DiMaggio and Powell contend that these organizations are rewarded for being similar to other organizations in their fields because it facilitates exchanges, helps attract personnel and maintain a good reputation, and sometimes makes the organizations eligible for contracts and grants.

Subsequently, those practices and procedures that are defined by prevailingly accepted concepts of organizations tend to be incorporated into the behavior of other organizations in the environment (Meyer and Rowan 1977). Further, studies of institutional diffusion demonstrate that as organizational forms spread to more organizations, they become more legitimate in the eyes of other organizations as well

(see DiMaggio 1991). Meyer and Rowan (1977) imply that once an organizational pattern is legitimized for a particular activity, only those organizations conforming to this pattern will be recognized as legitimate performers of this activity. Some of the sources of organizational legitimacy include: constituents of the organization, norms of the professions, generalized knowledge disseminated throughout the educational system, social prestige, law, state regulation, and definitions of negligence and prudence as established by the courts (Meyer and Scott 1983). However, I would argue, as Powell does (1991: 189), that it is unwise to view organizations only as manipulating appearances in pursuit of legitimacy. Organizations are concerned both with performing tasks efficiently and effectively and with legitimacy.

Isomorphic pressures.

Institutional theory proposes that organizational structures and processes are similar across organizations as a result of "isomorphic pressures": social pressures on organizations from other organizations in the environment and from norms within the organization (DiMaggio and Powell 1983). Institutional isomorphic pressures include both external pressure by other firms in the environment and internal pressure by members of the organization. With regard to external pressure from other organizations, Meyer and Rowan (1977: 341) argue that institutionalization involves the processes, obligations, or actualities that come to take on a rule-like status in the social thought and action of organizations in a population. Similarly, within an organization, Scott (1987: 496) suggests that institutionalization is a social process by which individuals in the organization come to accept a shared definition of a social reality for the organization.²⁶ DiMaggio and Powell (1983:150-4) suggest three

²⁶The idea of institutionalization as a social process is rooted in Selznick (1957) and Berger and Luckmann (1967). Selznick (1957: 16) saw institutionalization as a process of instilling value and viewed organizational structure as an adaptive vehicle shaped in reaction to the internal personalities of organizations as well as to influences and constraints from their external environment. His definition

mechanisms through which organizations seeking legitimacy conform: 1) coercive isomorphism, 2) normative isomorphism, and 3) mimetic isomorphism.²⁷ The function of isomorphic processes and behaviors is to lend legitimacy to the organization's structures, strategies, and behaviors. Some of the sources of legitimacy and hence isomorphic pressures include: public opinion, educational systems, laws, courts, professions, ideologies, regulatory structures, awards and prizes, certification and accreditation bodies, governmental endorsements and requirements.

Coercive isomorphism is the formal and informal pressure exerted by one organization on another as a condition for its support or approval. Coercive isomorphism occurs where organizational patterns are imposed on organizations by a more powerful authority, usually the state, sometimes a powerful supplier or corporation, when structural changes are imposed on companies that have been acquired, or when existing subsidiaries are reorganized. Legal and technical

of institutionalization emphasized accidental or unintended outcomes of various organizational policies, historical circumstances, and resistance to change.

²⁷More recently, Scott (1987) has identified seven patterns of isomorphism. Three are analogous to the DiMaggio and Powell categories: "Imposition of organizational structure" is equivalent to coercive isomorphism, "acquisition of organizational structure" to mimetic isomorphism, and "authorization of organizational structure" to normative isomorphism. Scott (1987) adds to this four more pressures, starting with the inducement of organizational structure, by which an organization that lacks power to impose patterns on other organizations instead offers inducement such as funding, or certification. A fifth isomorphic process is incorporation in which organizations come to mirror or replicate salient aspects of environmental differentiation in their own structures. Here, everything that happens is not necessarily intended; every outcome is not the result of a conscious decision process (Scott and Meyer 1987). This is in keeping with the frequent proposition in open systems theory that organizations will tend to map the complexity of environmental elements into their own structures (Buckley 1967).

A sixth pressure is imprinting, period effects on organization where an organizational form retains some of the patterns institutionalized at the time its industry was founded. With regard to imprinting, Stinchcombe (1965: 153-64) has suggested that the basic features of various industries--the characteristics of the labor force, establishment size, capital intensity, relative size of the administrative bureaucracy, relative size of the staff vs. line personnel, and proportion of professionals within the administration--have varied systematically by time of the company's founding. Westney (1989) notes that imprinting has been explored at the industry level by Stinchcombe (1965) and at the country level by theorists of late development (Gerschenkron, Dore, and Cole) and by some recent work in international management on country effects on the competitiveness of firms (Kogut 1986).

A seventh and final isomorphic process is the bypassing of organizational structures. Here, policies result not of organizational but of institutional processes. For example, much of the orderliness and coherence present in American schools is based on institutionally defined beliefs rather than on organizational structures (Meyer, Scott and Deal 1981).

requirements, such as the budget cycle, financial reporting, public disclosure, and registration, are examples of such coercive pressure.

Mimetic isomorphism comes from the organizational desire to imitate other organizations. This is imitative behavior in which organizations engage either when there are a daunting array of potential responses or models to be considered or when the situation or options are unclear. When organizational technologies are poorly understood, when goals are ambiguous, or when the environment creates symbolic uncertainty, organizations may feel the need to model themselves on other organizations. Thus, mimetic isomorphism arises as a mechanism to mediate uncertainty where organizations respond to uncertainty by adopting the patterns of other organizations defined as "successful" in that kind of environment. Examples of conduits through which mimetic pressures are carried include among other things networks of relations between firms and individuals.

Normative pressures are isomorphic mechanisms that lend stability to the organization and which derive from norms. These norms may arise through the use of professional groups (MBAs, for example) with similar training, modes of behavior, and conceptual and problem-solving tool kits (Merton 1957). Subsequently, these norms can be transmitted in the organization as these professionals seek to impose their own standards of norms and values to the organization. Normative isomorphism is most likely to occur where "appropriate" organizational patterns are championed by professional organizations (see also Scott's (1987) "authorization of organizational structure"). Orru, Biggart, and Hamilton (1991: 387) have noted that "institutional and normative factors are particularly important to organizational viability" in Japan, so that norms conveyed through the educational system are likely to be transmitted throughout firms which employ Japanese.

Westney (1989) points out that these forces indicate how environments induce

compliance in structures and processes from participating organizations. Westney also suggests that they parallel Etzioni's (1961) typology of organizational control systems or ways in which organizations induce compliance from their participants (coercive, normative, and utilitarian). Brint and Karabel (1991: 343) have noted that very little research has been done in explaining why particular organizational forms are chosen over possible alternatives, why organizational forms change over time in particular directions, and on how these mechanisms interact .

Practices as indicators of the effects of isomorphic pulls.

Empirical studies of isomorphism generally fall into two categories of level of analysis: structure and routines. The overwhelming majority of the empirical work on isomorphic pressures acting on the organizations has focused on formal structure: for example, DiMaggio's work on museums and public television stations (DiMaggio 1986), Rowan's work on how organizations such as public schools configure themselves (1982), and Fligstein's (1991) work on the spread of multi-divisional enterprise.²⁸

There is a small but growing subset of work that takes the level of analysis below the level of formal structure and looks at routines (e.g., Arias forthcoming). Meyer and Rowan (1977) note that formal structure and behavior are only loosely coupled (Meyer and Rowan 1977). Similarly, formal and informal organizational structures, various hierarchical levels, and espoused policy and observed outcomes are also loosely coupled (March and Olson 1976). Tremendous discontinuity exists between the organizational activities observed in practice and those codified in organization charts and formal goal statements.²⁹

²⁸ At the level of formal structure, population ecologists argue that formal structure is not real. Departments often turn out to be hollow structures, hence Freeman's use of the term "smoke and mirrors" in reference to structure.

²⁹ Accordingly, isomorphic pressures have crucial consequences for organizations. First,

I argue that isomorphic pressure affects not just in how organizations structure themselves but in how they actually behave and carry out routines. Routines as defined by Nelson and Winter (1980) are referred to in the human resource management literature as practices, where practices are what organizations do in a routine way.

Institutional theory suggests that some of the aspects most likely to highlight the firm's adaptation to the environment are practices, processes, and roles. Personnel practices and processes thus provide a setting in which institutional isomorphism will likely play a powerful role in explaining behavior, primarily because the performance standards for personnel practices are not as directly associated with performance measures such as profit or market share as practices in manufacturing or sales (Westney 1989: 11; Meyer, Scott and Deal 1983).

Personnel practices also provide a forum for examining the relationships between the various institutions or pressure groups interacting with the firm to see where changes and pressures to change come from. The groups most likely to bring about change in personnel practices include the parent firm, unions, the competition, media, government, and the universities providing new recruits (with whom many Japanese firms have strong relationships). As such, these groups offer an interesting insight into some sources of potential stress, strain and change behind the norms

organizations incorporate elements that are legitimated by other organizations rather than by a process of testing their efficiency for the organization in question. Second, organizations employ external or superficial assessment criteria to define the value of structural elements. Third, dependence on externally fixed institutions reduces turbulence and maintains stability. Accordingly, Meyer and Rowan (1977) suggest that organizations that incorporate institutionalized myths are more legitimate, successful, and likely to survive.

Since organizations are part of a larger interdependent system, they operate largely through requirements established by a superior element in the hierarchy of the system. Thus, institutional theory will have the greatest significance for both behavior and convergence in environments where a single powerful institution has a strong effect on one or more aspects of related departments or functions (Westney 1989). For example, in the research and development departments of firms, universities influence firms through controlling which students are introduced for recruiting to which firms, and governing the terms and conditions of the organization's relationships to future college graduates.

within the organization. They also offer insight into the dynamic processes involved in responding to competition, internal feedback, regulation, union demands and parent firm demands. Further, personnel policies and practices give insight into the organization's direction, as influenced by pressure groups, referent groups, and informal relationships with other organizations. On the other hand, personnel practices can also provide insight at the population level with regard to the construction of the organizational field as discerned through relevant reference groups as well as those groups' influence on firm behavior.

Applying institutional theory to the study of the multinational firm.

Institutional theory provides a way of looking at the social pressures on MNEs from both the parent firm and the host country environment. Focusing on practices allows one to compare empirically how MNEs respond to pressures for both global integration and local responsiveness. It expands the integration-responsiveness framework by taking the level of analysis from businesses down to functions, then to tasks, and then to practices within tasks.

The aims of this thesis are twofold. First, this thesis explores and operationalizes measures of parental pressures toward integration in order to empirically examine the relationship between parental control and similarity of parent and subsidiary practices. Second, it extends the integration-responsiveness framework beyond businesses, functions, and tasks within functions (Bartlett and Ghoshal 1989:97) to the level of practices or routines within tasks by examining the practices within the tasks involved in recruiting, training, and personnel performance appraisal. Here, the thesis will map these practices in relation to their descriptive and normative responses to parental control.

End notes**Normative beliefs within organizations**

Institutional theory directs attention to the role played by culture and normative beliefs as well as the sources of these beliefs. Westney notes that institutionalism often occurs when firms are not necessarily conscious of their choices (1989: 11). Sometimes organizations conform to practices because they take them for granted.³⁰ Accordingly, the basic vehicle for isomorphic influence lies in "the preconscious understandings that organizational actors share, independent of their interests." (DiMaggio 1988: 3). Along these lines, Powell notes that

social patterns may also reproduce themselves without active intervention when practices and structures come to be taken for granted, hence they are not questioned or compared against alternatives. Institutional patterns shape behavior such that some courses of action are perceived as natural and legitimate. Institutions provide shape to the moral definitions of the purposes and regulations of recurrent social life (Giddens 1984). Thus, in enacting their roles in the work place, the worker and the manager may never think about the institutional arrangements (of power, control, status, etc.) that these work settings imply.(1991)

As the webs of relationships between organizations become dense and interconnected, increasing numbers of accepted practices and structures arise. Powerful organizations force their immediate relational networks to adapt to their structures and practices. They attempt to build their goals and procedures directly into society as institutional rules (Meyer and Rowan 1977). Researchers see these processes as defining fields and setting them upon trajectories that eventually appear as "natural" developments to participants and observers alike (Brint and Karabel 1991). Thus, studies of the diffusion of new organizational forms suggest that organizational forms are standardized through the effortless evolution of commonsense understandings about how to organize (DiMaggio 1991: 268).³¹

Defining the environment

Powell has singled out the specification of boundaries of the organizational field as a major methodological problem in the institutional paradigm (1988:131).³² Often multiple institutional environments influence the organization (DiMaggio and Powell 1983, Meyer and Scott 1987). Scott has noted that

it is strongly implied there is not one but many institutional environments and that some would-be sources of rationalized myths may be in competition if not conflict. Thus, an important step is taken to move from a generalized to a differentiated model of institutional contexts; from a conception of the institutional environment to one of multiple, alternative institutional environments. (1991: 167)

The view of multiple institutional environments is most appropriate for this study because the American subsidiary in Japan operates within several contexts at once: the Japanese business environment, the environment of the "foreign firm in Japan" (as characterized, for example, by the close-knit ties within the American Chamber of Commerce in Japan), and within the environment of "multinational firm" of which it is part.

In this research, I will focus on the definition of the organizational environment as the organizational field, which will allow me to examine relationships between subsidiaries and local Japanese firms. Westney (1989) notes that the definition of "environment" in the institutional literature appears to be converging on "organizational field." One reason may be that the definition of organizational field suggests that the environment is made up of organizational ties within a common

³⁰ See Zucker (1983: 5) for further discussion of "conformity rooted in the taken-for-granted aspects of everyday life."

³¹ DiMaggio (1991: 268) notes that current institutional research overemphasizes "taken-for-granted, nondirected, nonconflictual evolution at the expense of intentional (if boundedly rational), directive, and conflict-laden processes."

³² Scott (1983) notes four definitions of the institutional environment, which include: 1) the "interorganizational field" (Aldrich 1972), 2) the "interorganizational network" (Benson 1975), 3) the "industry system" (Hirsch 1972), 4) and the "organizational field" (DiMaggio and Powell 1983). Two additional definitions include: 1) the "societal sector" (Meyer and Scott 1987), and 2) "organizational populations" (Hannan and Freeman 1977).

network (see Warren 1967, DiMaggio and Powell 1983: 148). DiMaggio and Powell define the "organizational field" to be:

those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products. The virtue of this unit of analysis is that it directs our attention not simply to competing firms, as does the population approach of Hannan and Freeman (1977), or to networks of organizations that actually interact...but to the totality of relevant actors. (1983: 148)

Westney (1989) distinguishes the organizational field from simple social analogs of the industry by pointing out that the organizational field is a social structure that involves interaction among its member organizations as well as mutual awareness of the activities that each has in common (DiMaggio and Powell 1983). Westney observes that the environment consists of "interaction among organizations and mutual recognition of participants that they share the same activity clusters" (1989: 5). The organizational field employs geographical boundaries which are usually based on political definitions (for example, metropolitan jurisdiction) and thus excludes non-local influences. Because the boundaries of an organizational field are empirically rather than conceptually derived, those boundaries may differ considerably across fields and across societies. The identification of organizational fields has furthered the research on the kinds of differentiation and system linkages that arise among a diverse set of organizations sharing a common locality (Warren 1967 and 1972, Turk 1977). With regard to system linkages, one area meriting further research is the role of networks as a source of diffusion. Along these lines, the forms of dependency in organizational fields have yet to be explored thoroughly. Fligstein notes that "it is important to establish to what degree reciprocal relations exist in organizational fields and how that affects actors' abilities to frame and direct action" (1991: 335).

Thus, defining American manufacturers in Japan as a subset within an organizational field focuses on the issue of foreign status and overcomes the limitations of industry definitions, which put large firms with many products into single product or industry categories. In the case of multinational firms, the common bond of expatriate status may prove to be a stronger common referent than industry or product.

To examine relationships between subsidiaries and parent firms, on the other hand, I have used Evan's (1972) definition of organizational set. The organizational set identifies the institutional environment on the basis of exchange of resources critical to a competitive interdependence among similar types of organizations. Evan (1972) suggests that the organizational set thus provides a level of analysis with which to examine how organizations are connected through direct interaction. As well, organizational sets seem best suited to support analyses focused on the power dependency relationships that arise out of the exchange of resources and information (Evan 1966, Thompson 1967, Pfeffer and Salancik 1978). Fligstein notes that

organizations are embedded in larger groups of organizations that may be defined in terms of product lines, markets, or firm size. These other organizations can be suppliers, distributors, or competitors (1991: 335).

DiMaggio (1986a) suggests that the links between these organizations can be characterized in network terms, and the substance of the links can range from formal relationships to personal friendships.

Departments of the firm most likely to be affected by isomorphic pressures

Just as different organizations respond to different institutional environments, different departments within organizations, it has been argued, respond to different institutional environments. Westney has noted that

most institutional theory to date either makes the implicit assumption that each organization operates in a single organization field, or assumes that organizations that straddle fields can insulate their organizational sub-units from each other and avoid generating isomorphic pulls across sub-units within the system as a whole (1989:9).

Accordingly, Scott and Meyer suggest that "organizations operating in more complex and conflicted environments will exhibit greater administrative complexity and reduced program coherence" (1988: 129).

Salk (1988) suggests that isomorphic pulls occur at the level of the subgroup or function (e.g. marketing, sales, and manufacturing) in that different functions respond to different environmental factors. Because personnel department output is not clearly measurable and self-

explanatory, there is an increased need for personnel departments to seek legitimacy and emulate leading organizations to rationalize or justify choices. At this level, one consequence of isomorphic pressure is the rationalization and legitimacy of personnel practices because they cannot be effectively implemented if people do not perceive them to be fair and legitimate.³³

³³In the same vein, Lawrence and Lorsch (1967) argue that different parts of an organization tend to define and enact or manifest their external environments in different ways so that different functional or project groups interact with different communities of external actors. As well, subunit members are oriented toward different professional or occupational or task-oriented communities. Task interdependence between external organizations, subunit goals, and the education and professional affiliations of dominant groups in a subunit will affect which organizations will become part of the subunit's enacted or manifested environment (Weick 1969).

Chapter 3: Exploring coercive, mandated and mimetic isomorphic pressures on multinational firms.

Each of the isomorphic pressures outlined by DiMaggio and Powell (1983: 150-4), coercive, normative and mimetic isomorphic pressure, can be viewed in the context of the MNE in terms of both pulls on the structure and processes of the subsidiary by the parent firm or the parent firm's environment, on the one hand, and pulls from the host country environment, on the other hand.

This chapter explores isomorphic pressure as it relates to pressures on the subsidiary by the parent firm and the local environment. Coercive isomorphic pressure is addressed briefly, followed by a more lengthy discussion of mandated isomorphic pressure, defined here as coercive pressure exerted by one unit of an organization on another: for example, from the parent to the subsidiary or from the headquarters to branch firms. Mandated isomorphic pressure will be explored in terms of 1) control of the subsidiary by the parent through task and structural interdependence, 2) control through financial resource allocation related to budgeting and ownership, 3) control through policy, 4) control through goal setting, 5) socialization of subsidiary managers (a hybrid of normative isomorphic pressure), and 6) control through example and communication (mimetic isomorphic pressure). Finally, imprinting will be addressed briefly with regard to the environmental conditions at the time of market entry, organizational change, and environmental change.

Coercive isomorphic pressure.

Coercive isomorphic pressure is the formal and informal pressure exerted by one organization on another as a condition for its support or approval. Coercive

isomorphic pressures are evident where organizational patterns are imposed by a more powerful authority, usually the state, but sometimes by a powerful customer or another corporation, when structural changes are imposed on companies that have been acquired or when existing subsidiaries are reorganized by an outside firm. Legal and technical requirements, such as the budget cycle, financial reporting, public disclosure, and registration, are examples of such coercive pressure.

Coercive isomorphic pressures can represent forces for both local responsiveness and global integration. Pressures for local responsiveness stem from legal and technical requirements in the subsidiary's host country environment. Pressures for global integration may stem directly from the parent organization or from other organizations mediated by the parent organization. For example, subsidiaries of American firms abroad are still required to abide by various American tax, bribery, and anti-trust laws.

Mandated isomorphic pressure.

Mandated isomorphic pressures are analogous to coercive isomorphic pressures, but occur within a multi-unit firm rather than between firms. While coercive isomorphic pressure has in the past referred to pressure exerted on organizations by outside organizations, mandated isomorphic pressure refers to coercive pressure exerted on one unit by another, e.g. from the parent to the subsidiary.

In this section, I set out to operationalize mandated isomorphic pressures in terms of: A) control of the subsidiary by the parent through task and structural interdependence, B) control through financial resource allocation related to budgeting and ownership, C) control through policy, D) control through goal setting, E) socialization of subsidiary managers (a hybrid of normative isomorphic pressure), and

F) control through example and communication(mimetic isomorphic pressure).

Control through task and structural interdependence. Task or structural independence here refers to the extent to which work processes are interrelated so that changes in the state of one element affect the state of the others. Control is exerted through tying subsidiary activities to parent activities so as to control subsidiary input or output with the by-product of decreasing subsidiary autonomy. The Aston studies (Child 1973) begin with the premise that organizations adopt structures that control or limit the amount of discretion exercised by their members so that functional behaviors can be chosen over dysfunctional ones in the presence of interdependence and work flow integration. In defining a centralizing strategy of control, Child (1973:3) suggests that, "One may attempt to maintain control directly by confining decisions to fairly senior levels in the hierarchy" to economize on the need for elaborate systems of procedures and paperwork and to reduce the need for certain areas of specialization.

Thompson (1967: 54-55) has proposed a useful typology for assessing degree of interdependence, identifying three levels of interdependence: 1) pooled interdependence, in which other work performed is interrelated only in that each element or process contributes to the overall goal; (For example, selecting fabrics and color schemes for the inside decor of a jet airplane is related to the plane's aerodynamic design only in that both contribute to the overall objective or final product.) 2) sequential interdependence, which exists when some activities must be performed before others; (For example, components parts of a jet engine must be produced before they all can be assembled into a single functioning unit.) and 3) reciprocal interdependence, which is present to the degree that elements or activities relate to each other as both inputs and outputs. (For example, design decisions

regarding the weight and thrust of a jet engine and the aerodynamic design of the fuselage and wings must take each other into account.) Thompson points out that these three levels of interdependence form a Guttman-type scale, in that elements or processes that are reciprocally interdependent also exhibit sequential and pooled interdependence, and processes that are sequentially interdependent also exhibit pooled interdependence.

Burns and Waterhouse (1975) found that the greater the structuring of activities, the greater the perceived control by managers. Similarly, the greater the complexity of the control system, the greater the decentralization and autonomy of the organization. With regard to effectiveness, various studies suggest that the greater the environmental uncertainty, the greater should be the degree of decentralization (Burns and Stalker 1961, Child 1975, Lawrence and Lorsch 1967, Lorsch and Morse 1974). In the case of the MNE, with multiple economic environments involved, research on volatile exchange rates (Lessard 1989) suggests decentralization of activities to deal with such uncertainty. In addition, units with non routine job-shop technology are more effective when operating under a high degree of decentralized decision-making (Comstak and Scott 1977, Hage and Aiken 1969, Perrow 1967, Schoonhoven 1981). The overall conclusion to be drawn from this body of research is that greater independence permits the unit manager to exercise greater discretion in dealing with the demands of his or her relevant task environment and results in better performance (Lorsch and Allen 1973, Thompson 1967, Vancil 1980).

Control through financial resource allocation such as budgeting and ownership. The third form of mandated isomorphic pressure placed on the subsidiary by the parent is the parent's control over the subsidiary through financial resource allocation systems related to budgeting and ownership. Stopford and Wells

(1972: Chapters 7 and 8) suggest that wholly owned subsidiaries afford the parent firm more control over the subsidiary's production and management. Certain strategies that demand tight controls are often associated with strong preferences for wholly owned subsidiaries, including: 1) use of marketing techniques to differentiate products, 2) rationalization of production facilities to reduce manufacturing costs, 3) control of raw materials, and 4) development of new products ahead of competitors.

Budgeting as a control mechanism has occupied a central place in the accounting and control literature (Hopwood 1972, Otley 1978). Budgeting offers a means of control by limiting the subsidiary's autonomy through limited discretionary funding. Hopwood (1972) indicated a significant negative relationship between a heavy emphasis on meeting the budget and organizational performance, suggesting that severe control resulted in poor performance. Otley (1978) suggested that a heavy emphasis on budget would be more effective under conditions of high autonomy, but it would be ineffectual when autonomy was low. Hirst (1983) and Govindarajan (1984) provided evidence to show that when environmental uncertainty was high, emphasizing the budget was associated with negative consequences; however, this relationship was reversed when uncertainty was low. Finally, Govindarajan (1988) found that meeting the budget contributed to the effectiveness of low-cost strategic business units (SBUs), whereas de-emphasizing the budget contributed to the effectiveness of differentiation of SBUs. The common theme in this literature has been that, from a normative point of view, the tightness of budget evaluation style needs to be directly proportional to the degree of a manager's control over organizational performance.

Control through policy. Organizations carrying on even the most complex types of work perform many activities that can be regulated by rules,

policies, and performance programs to secure acceptable outcomes (Scott 1987: 215). Policies and rules represent agreements about how decisions are to be made or work is to be processed that often predate the work performance itself. Even with complex and uncertain tasks, it is possible to develop "switching rules" that signal which of several clusters of activities is to be performed or the order of their performance (see March and Simon 1958: 142-50). Further, organizations may attempt to control behavior indirectly by relying upon procedures and records as methods for limiting discretion (exception reporting is an example) and for monitoring activities. Within limits imposed by such indirect controls, decisions can be delegated to lower levels in the hierarchy, and to employees in specialized roles, some of whom are concerned with operating the indirect control system itself. Child refers to this as the bureaucratic strategy of control (Child 1973:3). Here, I examine rules and policies as mechanisms for the parent to control the subsidiary. As such, I have operationalized control here as perceived control over both subsidiary general management policy and HRM policy. As a context in which to place this policy control, I have also included questions on the clarity of parent policy, culture, and goals for the subsidiary.

Control through goal setting. Targeting or goal setting also can provide an alternative to attempting to program and regulate closely the work of all participants or requiring that all decisions be made above the level of the performers (e.g. see Scott's 1987: 217).³⁴ Galbraith (1973) argues that in the MNE, coordination between the parent and the subsidiary is secured not by minute descriptions of work procedures but by the specification of desired outcomes.³⁵ With regard to MNEs,

³⁴In this way, organizations confronting increased complexity and uncertainty can delegate some autonomy to workers.

³⁵In the example of the manufacturing firm performing customized work, a manager could provide the production department with a detailed specification of the desired product together with cost and time constraints but allow participants to exercise their own judgment and skills in arriving at a product that would satisfy these requirements. Delegation is present to some extent and for some positions in

Gupta and Govindarajan (1991) have defined outcome control over the subsidiary as reliance on the end results for assessing a subsidiary's performance. These performance goals or end results include subsidiary performance measures such as sales growth rate, market share, operating profits, return on investment, and the subsidiary's contribution to the MNE's consolidated profits and to the MNE's overall strategic positioning, as well as cost reduction and new product development. They also include personnel-related performance measures such as job satisfaction of employees, turnover rate of employees, absenteeism rate of employees, and employee development. As a form of parental control over the subsidiary, control by goal setting represents one type of mandated isomorphic pressure.

Control through normative isomorphic pressure, such as nationality and socialization of subsidiary top management, and presence of expatriates.

Normative isomorphic pressures are isomorphic mechanisms that derive from norms. Organizational norms may arise through the use of professional groups with similar training, modes of behavior, and conceptual and problem-solving tool kits, with MBAs as an example (Merton 1957). MNEs can employ normative isomorphic pressures as a means of mandated isomorphic pressure when they train subsidiary managers or assign expatriates to subsidiaries with the goal of inculcating parent-firm norms. Subsequently, these norms are transmitted to the organization, as these professionals seek to impose their own standards of norms and values on the organization. Normative isomorphism is most likely to occur where "appropriate" organizational patterns are championed by professional organizations (see Scott 1987 "authorization of organizational structure"). With regard to Japan, Orru, Biggart, and Hamilton (1991: 387) have noted that "institutional and normative factors are particularly important to organizational viability." Norms on human resource

most organizations.

management has been transmitted across the large firms in Japan (e.g., Clark 1979, Dore 1973).

Normative isomorphic pressures can characterize pressures for both local responsiveness and global integration. The parent firm can inculcate norms into the subsidiary to globally integrate operations through the assignment of expatriates to the subsidiary or through the socialization of subsidiary managers. On the other hand, the employment of local nationals can serve to inculcate local norms in the subsidiary, bringing the subsidiary closer into alignment with local norms. The integration-responsiveness framework highlights the various conflicting directions of normative isomorphic pressures on the subsidiary.

Nationality of subsidiary head. In defining a centralizing strategy of control, Child (1973:3) suggested that, "one may attempt to maintain control directly by confining decisions to fairly senior levels in the hierarchy" to economize on the need for elaborate systems of procedures and paperwork and to reduce the need for certain areas of specialization. Boyacigillar (1990: 359) noted that "placing U.S. nationals in managerial positions affords the MNE a flexible means of control without overburdening the MNE with a complex structure of expensive and time-consuming socialization programs."³⁶ Instead of sending each issue to the central offices for approval, the trusted home country manager assumes a key position in the subsidiary. The immediate effect is to increase the capacity of the communication channel between the center and the subsidiary and to allow greater local discretion and responsiveness. Expatriate managers are likely to have a more comprehensive understanding of the MNE's overall global strategy and to be motivated to operate in the MNE's overall best interests rather than the subsidiary's interest because they hope to advance their careers in the parent's corporate headquarters and thus are likely to have a greater

³⁶See also Tung 1982 and Zeira & Shenkar 1986.

commitment to the MNE's global operations than are host country nationals. Managers usually stay only two to five years and move on. They often do not learn the local language or become integrated into the local subsidiary, lessening the likelihood of "going native" and representing the subsidiary's interests over those of the parent.

On the other hand, general managers who are host country nationals rather than expatriates have been portrayed as more familiar with the local environment, as developing stronger rapport with local managers, and as developing a stronger identification with and commitment to the local subsidiary than to the parent (Tung 1982, Zeira 1976), especially in the case of Japan (Zeira & Harari 1979). Host country nationals are likely to have a deeper understanding of the local sociocultural, political, and economic environments. Boyacigillar (1990: 360) sums up the trade-off between the increased communications afforded by an expatriate general manager and the local market knowledge afforded by a host country national general manager by quoting a Scandinavian manager describing an MNE's operations in Japan :

Nowadays there seems to be a tendency toward "over-Japanization" of the foreign company in Japan, i.e. the top management is after initial stages of starting up business staffed entirely with Japanese executives. It has been observed that this can create serious problems particularly in the communication with the head office overseas. In one actual case, the Japanese president of a joint venture company got so frustrated with his communication problem that he actually resigned and returned to the large Japanese corporation he originally came from. The occasional visitor from the head office cannot possibly understand all the complexities of carrying out business in Japan, and what the Japanese executive in the related case actually wanted was to have an able person from the head office permanently stationed in Japan and with whom he could discuss the various problems on the spot. (Bengt Delaryd, vice president and representative for the Tokyo office of Skandinaviska Banken, quoted in Robinson 1978: 297).

Corporate socialization of parent and subsidiary managers. Van Maanen and Schein (1979:21) have defined organizational socialization as the process by which "an individual is taught what behaviors and perspectives are customary and desirable within the work setting." A central integrating mechanism in the

transnational is what Bartlett and Ghoshal refer to as a shared vision, a "state of mind" in which managers balance the different dimensions of area, product, and function in their decision-making (Bartlett and Ghoshal 1990) and view the organization as a whole.³⁷ Cognitive maps in use by management clearly differ between headquarters and subsidiary managers, as well as between executives from different functions, different cultures, and diverse experiences (Prahalad, 1976, Doz 1977, 1979). Bartlett and Ghoshal argue that firms respond to the imperative for organizational learning through diffused innovation, using joint development and worldwide sharing of knowledge. Bartlett and Ghoshal (1989) argue that it is the role of top management to develop a managerial mentality throughout the company to encourage individual managers to share their corporate vision.

For Hedlund (1986), the shared mental map goes well beyond the strategic vision. He sees subsidiaries as responsible not only for their own company, but for the MNE as a whole (1986: 22). Thus, the notions of headquarters and home countries dissolve into a wholistic view of the firm. Further, information about the whole is contained in each part, emphasizing a widely shared awareness of central goals and strategies. The whole firm is seen as a single brain so that thinking is not restricted exclusively to one center but goes on in the whole enterprise. Finally, coalitions with other companies and other actors serve as catalysts, bringing together elements with synergistic potential, perhaps from firms representing different businesses or country markets previously unknown to one another. In terms of implementing a shared mind set, Prahalad and Doz suggest strategic control involving the assignment of different strategic missions to subsidiaries depending on the nature of competitive interaction at any given time. The key for strategic control is to have the most important subsidiaries share a common vision with headquarters.

³⁷Traditional approaches to coordination were "architectural," a search for the right "structure, product, geography, or matrix" (Doz, Bartlett and Prahalad 1981, Mathias 1978, Prahalad 1980).

Within the MNE, Gupta and Govindarajan (1991) define corporate socialization of subsidiary managers as the processes through which the subsidiary managers' values and norms become closely aligned with those of the parent corporation. As Edstrom and Galbraith (1977) and Ouchi (1979) have argued, socialization of managers can be a powerful mechanism for building identification with and commitment to the organization. Some of the key processes through which such socialization occurs are job rotation across units and management development programs involving participants from several units (Edstrom and Galbraith 1977).

Hedlund argues that firms integrate primarily through normative control (norms and corporate culture) and only secondarily through calculative and coercive/bureaucratic relations.³⁸ Prahalad and Doz argue that the flow of knowledge, innovation, and shared learning (particularly expertise, skills, and capabilities) is accomplished as much through the socialization of its members as through formal systems. Bartlett and Ghoshal (1989) note that socialization has constituted a traditional means of coordination in European companies. Doz and Prahalad (1984: 55-72) propose normative control in the form of "managers' management tools" in which the purpose is to set norms and standards of behavior as well as personal objectives that are consistent with the desired strategic direction. Such tools work both directly--through their actual impact on managers--and indirectly--through the precedents they set and the meanings they assign to specific situations and choices. Thus, socialization can be viewed as a control strategy (Hall 1968).

Gupta and Govindarajan (1991) suggest that the flow of internal administrative information (such as the exchange of monthly financial data) can be controlled through

³⁸He reasons that pure bureaucratic control will break down because of the number of dimensions involved and pure calculative control (which may serve well in the polycentric firm) will not establish mutual trust, the ability to sacrifice the local for the global and the short term for the long term.

personnel transfer and time spent by subsidiary management in headquarters. Edstrom and Galbraith (1977: 249) have hypothesized that in the MNE, the transfer of managers is a process for socialization and verbal information network creation. They suggest that continued international transfer of employees from the parent's headquarters throughout their career provides a primary process for socializing both transferred managers and subsidiary managers under their direction. Constant rotation is also hypothesized to achieve and maintain control by socialization.

Transfer provides knowledge of other units, which eliminates the need to communicate even if there is desire for coordination (Pfeffer and Lebleci 1973). Transfers can increase knowledge of the network, develop multiple contacts within it, and increase the likelihood that these contacts will be used in collecting information. These contacts among subsidiaries, and between subsidiaries and the parent, generate sufficient information, which, together with socialization, allow greater decentralization of decision-making in situations of interdependence (Hage, Aiken, and Marrett 1971). In this study, I operationalize corporate socialization in terms of the subsidiary head or subsidiary HRM head's years of experience in the parent headquarters and in other subsidiaries.

Presence of expatriates. Toward maintaining control through personnel placement, Galbraith (1973) and Nadler and Tushman (1987) have identified liaison positions, cross-unit committees, integrator roles, and matrix structure as the key formal structural mechanisms for coordination between subunits in an organization. Expatriate managers at lower levels of status than the general manager often play this type of liaison role, as subsidiaries are typically staffed by a mixture of host-country employees and parent-country expatriates. This type of mandated isomorphic pressure may result in the subsidiary employing processes or organization structures similar to those of the parent, where it might otherwise be more locally

responsiveness in the absence of expatriates. Thus, expatriates often act as "carriers" and help to transmit parent country organizational practices to the affiliate (Lincoln, McBride, and Hanada 1986), while those subsidiaries comprised exclusively, or almost exclusively, of local employees might be expected to follow closely local management practices. To the extent that the affiliate is comprised of expatriates, its management practices may tend to be more like those of the parent firm. Thus normative parental control in this study is operationalized in terms of the nationality of the subsidiary and HRM heads and the number of non-Japanese expatriate managers in the subsidiary.

Mimetic isomorphic pressure and imprinting.

The following section briefly addresses mimetic isomorphic pressure and imprinting. Mimetic isomorphic pressure is explored in terms of density of local and overseas contacts and environmental uncertainty. Imprinting is addressed briefly with regard to environmental conditions at the time of market entry, organizational change in the subsidiary, and environmental change in Japan.

Mimetic isomorphic pressure. Mimetic isomorphic pressure is the pressure on organizations to imitate other organizations in their environment. Organizations engage in this imitative behavior when there are either a daunting array of potential responses or models to be considered or when the situation or options are unclear. When organizational technologies are poorly understood, when goals are ambiguous, or when the environment creates symbolic uncertainty, organizations may feel the need to model themselves on other organizations. Thus, mimetic isomorphism arises as a mechanism to mediate uncertainty when organizations respond to uncertainty by adopting the patterns of other organizations defined as "successful" in that kind of environment. Organizations tend to model themselves after similar

organizations in their field that they perceive to be more legitimate or successful. Examples of conduits through which mimetic pressures are carried include, among other things, networks of relations between firms and individuals (DiMaggio and Powell 1983).

Mimetic isomorphic pressures also include pressures for both local responsiveness and global integration. Subsidiaries may feel mimetic pressures to conform both to the local environment and the parent firm. In the area of practices, imitating parent firm practices makes certain tasks more efficient, and facilitates interactions between the parent and the subsidiary. On the other hand, replicating local practices may make interaction with firms (suppliers, customers, etc.) in the local environment easier.

There are various elements of mimetic isomorphic pressure, including: 1) the influence of bench marking and other reference groups, 2) density of communication and the influence of local as opposed to overseas contacts, 3) duplication under environmental uncertainty and changing products and processes, and 4) the influence of competition.

Density of local vs. overseas contacts and reference groups. Westney (1989) notes that the organizational field is a social structure that involves interaction among its member organizations as well as mutual awareness of the activities that each has in common (DiMaggio and Powell 1983). The definition of the "organizational field" suggests that the environment is made up of organizational ties within a common network (see Warren 1967, DiMaggio and Powell 1983: 148). DiMaggio (1986a) suggests that the links between these organizations can be characterized in network terms, and the substance of the links can range from formal relationships to personal friendships .

Communication patterns consistently have been regarded as a major determinant

of an organization's effectiveness in creating and diffusing innovations (Allen & Cohen 1969; Burns and Stalker 1961, Tushman 1977, Van de Ven 1986). The underlying premise has been that success at innovation requires adequate information-processing capacity in the system and that such capacity is a function of the intensity of communication. Tushman (1977) conceptualized the intensity of communication between two individuals in terms of three dimensions: frequency, informality, and openness. In the case of communications between two organizational units, as distinct from two individuals, Gupta and Govindarajan (1991) added to this a fourth dimension, communication density, the frequency, informality, openness, and density of communication between the subsidiary and the other units. Patterns of interaction between managers can be influenced via the nature of meetings held, the way in which top managers spend their time and encourage or discourage dissent, the respect they show for local analysis, and so forth (Prahalad and Doz 1984: 55-72). Gupta and Govindarajan (1991) add to these process variables the emergent patterns of communication and the level of corporate socialization of subsidiary managers.³⁹ In this study, I have operationalized communication density in terms of the contact the subsidiary head and subsidiary HRM head have with the following local and parent organizations: 1) headquarters top level management in the U.S., 2) headquarters HRM unit in the U.S., 3) Japanese joint venture partner (if there is one), 4) Japanese vendors or suppliers, 5) heads of Japanese companies in Japan, 6) HRM personnel of Japanese companies in Japan, 7) American heads of other U.S. companies in Japan, 8) American HRM heads in other U.S. firms in Japan, 9) Japanese consulting firms in

³⁹To achieve coordination, Hedlund suggests that heterarchy rely on conflict resolution through negotiations based on shared perspectives and bargaining. Doz and Prahalad (1984: 55-72) note that conflict resolution tools structure how key processes actually work. Bartlett and Ghoshal (1989) stress legitimizing diverse perspectives and capabilities through providing access and ensuring influence. Providing access entails allowing managers with new perspectives and capabilities to relate them appropriately to the company's objectives, interests, and priorities. Ensuring influence involves ensuring that new management has the organizational clout to influence decisions, such that legitimacy and access are backed by formal organizational power.

Japan, 10) American consulting firms in Japan, 11) American Chamber of Commerce in Japan, 12) American trade associations in Japan, and 13) managers in subsidiaries located in other countries. I also asked the respondent to whom they reported directly (requesting the position and location of that person).⁴⁰

The more uncertain an undertaking, the more desirable it is to have higher frequency and informality in communication patterns (Tushman 1979). Similarly, effectively adapting to environmental uncertainty requires unstructured decision-making processes, which usually involve dense communication patterns (Duncan 1973). As such, the high frequency of interunit communication helps to facilitate the adoption and diffusion of innovation across multinational subsidiaries (Ghoshal & Bartlett 1988). In addition, Keegan (1974) suggests that oral communication provides an important source of information for managers in environmental scanning in MNEs. In sum, denser communication patterns create more conduits for socialization and transfer of practices.

Duplication under uncertainty and changing products and processes. O'Reilly and Pondy (1979: 125) note that "uncertainty, which threatens the ability of the organization to survive and attain its goals affects the structure and functioning of organizations." The management of uncertainty is exacerbated in MNEs where the interdependencies may be between subunits in geographically and culturally disparate locations (Doz 1980). Uncertainty here refers to the dimension of variability of the elements upon which work is performed or to the extent to which it is possible to predict their behavior in advance as set out in Scott (1987: 212). Dimensions affecting uncertainty include the degree of stability or variability and the extent to which the entities are undergoing change; for example, the rate of product

⁴⁰While top management communications with other organizations only represent a small portion of the focal organization's communications with other organizations, top management's communications have the greatest relevance and accuracy here as they are the most likely ones to be communicating with the parent organization.

innovation within the industry category to which a given firm belongs (see Scott 1987: 128). Specific measures of uncertainty include uniformity or variability of inputs, the number of exceptions encountered in the work process, and the number of major product or process changes experienced. To study manufacturers, I examine uncertainty in terms of product and process changes, HRM practice changes, competition, future Japanese market trends, and personnel trends.

Duplication under competition: competitive pressures. At the organization level, organization-environment theories propose that there are two types of organizational isomorphism: competitive and institutional. In part, competitive pressures drive structural change (Meyer and Rowan 1977, DiMaggio and Powell 1983). In part, organizations may seek to adopt structures or processes which reflect the institutional environment, defined in this study as other firms in the same industry (firms in supplier, customer and other related industries; and government institutions).

Competitive isomorphism arises out of efficiency pressures and other performance concerns such as profit, and cost and defect reduction. Organizations react to competition by adapting their structures and processes to those of other organizations in the environment, so that practices and structures come to converge across these organizations. Focusing on economic fitness, theories of competitive institutionalism assert that isomorphism develops because decision-makers learn appropriate responses and adjust their behavior so that non-optimal organizational forms are eliminated out of that population of organizations (Hannan and Freeman 1984).

The population ecology model examines why certain forms or types of organizations survive and multiply whereas other types languish and die. In this model of natural selection, environments differentially select organizations for survival on the basis of fit between organizational forms and environmental characteristics.

Three processes are emphasized in evolutionary analysis: the creation of variety, the selection of some forms over others, and the retention of those forms (Campbell, 1969).⁴¹ In the third stage, the selected forms are preserved in some fashion, by reproduction or duplication.

Thus, I have categorized competitive isomorphism under mimetic isomorphism here because of its aspect of duplication of structure, processes, and practices across organizations. Powell (1991: 185) notes "how difficult it is to neatly separate economic and institutional processes. Even the most competitive of activities is possible only because of micro- and macro-level institutional arrangements that insure the reproduction of economic exchange." In this way, competition, like uncertainty, may engender pressure for firms to look to and copy the behavior of other firms seen as successful in the same environment.

Imprinting.

Imprinting here refers to the period effects on organization, such that an organizational form retains some of the patterns institutionalized at the time the industry was founded. Stinchcombe (1965: 154) suggests that certain types of organizations were formed at certain times in history, and that typically, organizations formed at one time have a different social structure from those formed at another time. He also notes that the basic features of various industries that have varied systematically by time of the company's founding typically include: the characteristics of the labor force, establishment size, capital intensity, relative size of the

⁴¹ This is analogous to Weick's (1969) three stages of enactment, selection, and retention. The process of enactment introduces information and variety into the system, which is dealt with according to organizational rules or routines: the greater the equivocality in the information introduced, the smaller the number of rules that will be activated to deal with the input. If the input is highly equivocal, only a small number of general rules are used to attempt to structure the input; however, if the input is better understood, a greater number of rules can be applied in responding to it (1969: 73). The application of the rules reduces by selection the equivocality of the information. The final phase of information processing determines what information is to be retained for future reference.

administrative bureaucracy, relative size of the staff vs. line personnel, and proportion of professionals within the administration (1965: 153-64).

As Stinchcombe observes, "organizations which are founded at a particular time must construct their social systems with the social resources available" (1965: 168). Once established, an organization of a given type tends to retain the basic features acquired at its origin. For example, only those firms established during the last few decades use professional staffs extensively; industries composed of small firms at the outset tend to retain this characteristic over time (1965: 155-69).

Along the lines of Stinchcombe's definition of imprinting, American manufacturers in Japan demonstrated at their founding a particular combination of economic, technical, and social resources, due in large part to the nature of their nationality and the compressed period of market entry for the majority of firms. Particularly in the case of foreign firms in Japan, conditions such as government relaxing foreign investment regulation had to be in place for many of these organizations to begin operations in Japan. The spurt of entry into Japan during the 1970s with the devalued yen was due in large part to an advanced technological base (provided in many cases by the parent organizations), sufficient capital, and a trained labor force willing to venture out away from traditional career paths in Japanese firms, as well as an appropriate organizational form perceived to be legitimate by the Japanese business community (see Scott 1987: 160). In addition, the larger cultural norms of the Japanese business environment had to support these foreign ventures, and their the goals and methods of reaching those goals had to be regarded as legitimate.

This chapter explores imprinting in terms of: 1) the influence of conditions at time of founding, such as the proportion of non-Japanese employees in top management and of American equity, and the age and size of Japanese operations both

now and at time of founding, 2) the evolution of the organization with regard to inertia in terms of the change in HRM practices now and since founding, and 3) the influence of environmental change.

Influence of conditions at time of founding. In the case of American companies in Japan with over 50% American equity, their Japanese operations were usually founded either as wholly owned subsidiaries or joint ventures (see the chapter on the American firm in Japan). In early studies of MNEs, wholly owned subsidiaries were often set up in the image of their parent firm (Brooke and Remmers, 1970) and took on many of the parent's management practices. As an example, Proctor & Gamble set up its foreign affiliates as "exact replicas of the United States Proctor & Gamble organization" on the belief that using "exactly the same policies and procedures which have given our company success in the United States will be equally successful overseas" (cited in Bartlett & Ghoshal, 1989:38). Over time, these subsidiaries may adopt a number of local practices, but, especially if organizations are relatively inert (Hannan and Freeman, 1977; Singh, House, and Tucker, 1986), they will likely continue to bear a strong resemblance to their parent. By the same logic, acquired affiliates, which began as independent local firms, may over time establish consistency with the MNE's parent on some key practices, but could be expected to continue to resemble local firms.

Organizational change and inertia: change in HRM practices since founding. Stinchcombe (1965) provides evidence for the stability of organizational structures over time and suggested that organizations do not easily or quickly change their structural features. Impediments to change include both internal and external constraints. This hypothesis addresses internal or organizational constraints while the following hypothesis addresses external or environmental constraints. Hannan and Freeman (1977: 931-32) cite as internal organizational constraints to change: the

organization's investment in capital equipment and trained personnel, constraints on the transfer and processing of information, the costs of upsetting the internal political equilibrium, and the conservative forces of history and tradition. In this thesis, organizational change is examined in terms of change in the subsidiary's HRM practices since founding, the change in percentage of non-Japanese management, and the change in percentage of American equity and the age of the subsidiary.

The influence of environmental change. In much of the population ecology research to date, great attention has been given to the states of the environment that give rise to particular adaptive forms. Freeman and Hannan (1983) define environmental variability as the extent of change observed in areas such as resources and the level of competition over a specific period of time and cite as external environmental constraints to change: legal and fiscal barriers to entry and exit from markets, environmental limitations on the flow of information, and the difficulty of securing the external political and social support to legitimate change (1977: 931-32).⁴² Within a technical framework, organizations are seen as being highly valued for their reliability and their capacity to "produce collective products of a given quality repeatedly" (Hannan and Freeman 1984: 149). Within an institutional framework, organizations are appreciated for their accountability and their adherence to "norms of procedural rationality" (Hannan and Freeman 1984: 153). Organizations that exhibit either high reliability or high accountability are more likely to survive, given a reasonable degree of environmental stability.

⁴²A related dimension is that of grain, the frequency with which changes occur over the period. An environment characterized by very rapid changes is said to be fine-grained and one with less frequent changes, coarse-grained. Following general ecological arguments, Freeman and Hannan (1983) predicted that generalist organizations--those organizations performing a greater diversity of tasks and having higher levels of slack resources--would be more likely to survive in coarse-grained environments. Specialist firms were expected to flourish in stable environments but also in fine-grained environments with rapid change. Specialist organizations were expected to be able to ride out environmental changes in which a given state was rapidly replaced by an alternative state. But only the generalists were expected to survive wide fluctuations of longer duration.

Under conditions of higher environmental uncertainty, however, inertia becomes a liability rather than an asset, preventing the organization from changing enough, or quickly enough, to survive. Uncertainty here refers to the dimension of variability of the elements upon which work is performed or to the extent to which it is possible to predict their behavior in advance as set out in Scott (1987: 212). Dimensions affecting uncertainty include the degree of stability or variability and the extent to which the entities are undergoing change, for example, the rate of product innovation within the industry category to which a given firm belongs (see Scott 1987: 128). Specific measures of uncertainty include uniformity or variability of inputs, the number of exceptions encountered in the work process, and the number of major product or process changes experienced.

**Chapter 4:
The evolution of the literature on American firms in Japan.**

Western firms in Japan today.

Foreign subsidiaries in Japan play a strategic role for their parent companies in keeping abreast of world class competition, leading edge technology, and product development, as well as in tapping Japan as the second largest country market, with 14% of the world's gross national product. As of 1989, there were approximately 5000 foreign-affiliated firms in Japan, comprised of 1,300 foreign wholly owned subsidiaries, 1,400 foreign branches, and 1,600 foreign-Japanese joint ventures in Japan. Of the 5000 foreign-affiliated firms in Japan, 46.8% are from the U.S. and 44.5% are from Europe.⁴³

To date, 3% of U.S. global investment--about \$19 billion or the equivalent of 15 Boeing 747 aircraft--has been made in Japan.⁴⁴ By comparison, Japanese investment in America reached \$48.5 billion by 1988, tripling American investment in Japan. Currently, American firms invest about \$2 billion annually in Japan while Japanese firms invest about eight or nine times that in America.⁴⁵

However, foreign firms in Japan tend to do extremely well there, with an apparent average return on investment of 19% annually, twice as high as that in the U.S.⁴⁶ A listing of the most profitably held private companies in Japan includes ten companies with 50% or more foreign ownership: IBM Japan, Pfizer, Coca Cola, Caltrex, Caterpillar, 3M, Hewlett Packard, Nestle, Fuji Xerox, and Toa Nenryo

⁴³To date, few companies from South America, the Middle East, or Africa have established more than token representation in Japan. East West Economic Institute, Toyo Keizai, 1991.

⁴⁴American Chamber of Commerce Review and Update of U.S. Direct Investment in Japan, Sept. 1989 and 1991.

⁴⁵As such, Japan's annual investment in the U.S. equals the cumulative American investment in Japan.

⁴⁶United States Manufacturing Investment in Japan (Tokyo: The American Chamber of Commerce, 1990).

(Exxon and Mobil, each 25% equity).⁴⁷ Manufacturers accounted for about 30.6% of the overall number of foreign affiliates in Japan in 1991 and continue to expand their business in Japan despite high rents and the end of the bubble economy.

Chapter overview and context.

In addition to their strategic importance, American subsidiaries in Japan provide an ideal focus for examining organizations facing dual pressures from firms operating in radically different environments, here the parent company in America and the surrounding firms in Japan. Such radically different environments with their dramatically different practices highlight the conflicting pressures on the subsidiary, and provide a context for exploring the effects of parent pressures on organizational outcomes in American subsidiaries abroad. In contrast to the MNE literature of the late 1980s, much of the literature on American MNEs in Japan emphasizes local responsiveness to the almost complete exclusion of global integration.⁴⁸

This chapter provides a brief historical and organizational context for looking at American firms in Japan, examining macro-level environmental constraints and micro-level internal organizational difficulties. Beginning with micro-level organizational difficulties, it will examine the evolution of more recent literature on American firms in Japan. This literature generally suggests that foreign subsidiaries not fight local isomorphic pressures but conform to Japanese personnel practices,

⁴⁷Diamond Company Rankings: Special Issue of Weekly Diamond (Diamondo Kigyō Rankingu: Shukan Diamondo Bessatsu, Tokyo: Diamondo-sha, 1989).

⁴⁸Kang discusses conflicting pulls from the parent and the environment, but only suggests that the subsidiary provide business results, execute strategies well, be an integral part of the parent company's strategy, and keep the parent involved (1990: 64, 140). Huddleston does not directly mention integration with the parent company but does suggest that the ideal general manager for the subsidiary from the parent company's point of view, is immune to social pressures from the Japanese community, whether they be suppliers, customers, banks, or tax authorities. Most importantly, he can reach much higher levels in the Japanese business and government community as a foreigner with the title of president/general manager than can a Japanese who has been hired from outside to work for a foreign company (Huddleston 1990: 14). Further, a Japanese general manager...would not be willing to speak up to the parent CEO when the CEO is wrong (H13).

modes of inter-firm interaction, and other business norms. I conclude by setting out some of the important company variables to be taken account. With regard to macro-level constraints, I trace American presence in Japan in light of Japanese regulation of foreign direct investment from the Meiji era through the present.

Placing the literature on operating in Japan into a context of local responsiveness and isomorphism.

The first part of this chapter traces the literature on American companies in Japan published between the early 1980s and the early 1990s, focusing on the multitude of literature falls that into a normative, "how-to" category: how to assess and enter the Japanese market, how to set up and organize a foreign subsidiary in Japan, and how to deal with personnel issues. This more recent literature on American firms in Japan advocates local responsiveness to the extent of reorganizing one's way of doing business to conform to local practices, organizational forms, and procedures. Such bowing to local isomorphic pressure includes: 1) bringing local business norms into the organization through the employees hired (normative isomorphism), 2) copying the practices of surrounding Japanese firms (mimetic isomorphism), 3) conforming to organizational methods set out by organizations in authority (the government, industrial group norms, distribution system norms) (coercive isomorphism).⁴⁹ (See appendix at end of this chapter for brief reviews of each book included in this section.)

Organizational norms in implementing local responsiveness.

The most obvious way American firms in Japan adapt to the local environment is through staffing their operations almost wholly with Japanese.⁵⁰ Bringing in new

⁴⁹Historical literature including the work of Mark Mason and Denis Encarnation trace the presence of American companies in Japan back to the pre-war period.

⁵⁰The recent plethora of literature on setting up operations in Japan unanimously advocates having a Japanese manager (rather than a headquarters representative) oversee general affairs and personnel. See, for example, McKinsey's 1983 study which suggests the number of Americans assigned to the

employees, particularly mid-career hires, brings various norms into the organization. The use of employees with similar training, educational background, firm experience, modes of behavior, and conceptual and problem-solving tool kits (such as MBAs) (Merton 1957) as such constitutes a form of normative isomorphic pressures. With regard to Japanese business norms, Orru, Biggart, and Hamilton (1991: 387) have noted that "institutional and normative factors are particularly important to organizational viability" there, so that norms conveyed early on through the Japanese educational system are likely to be transmitted throughout firms which employ Japanese. Three broad categories of employees are examples of various Japanese norms in the foreign firm in Japan: A) Japanese male middle managers hired early on in the foreign firm's establishment in Japan, B) executive recruits, especially in the case of joint ventures, and C) well-educated female employees. These three categories are characterized by differing levels of employee competence, views of organizational norms inculcated through training, and educational backgrounds. Often Japanese male middle managers hired early on in the foreign company's establishment in Japan only joined the small foreign operation because they could not find a job with a larger, more prestigious company.⁵¹ Huddleston (1990:11, 47) notes that a male Japanese who works for a foreign company is generally a social cripple and an outsider in Japan, usually with second-rate educational qualifications."⁵²

Managers with extensive previous experience in Japanese firms tend to bring their previous company's methods of operation, training, and various other norms

Japanese subsidiary should be kept small (1983: 84). This leaving the running of local operations to local managers is very much in keeping with the style of American MNEs abroad. Huddleston and others suggest that even the subsidiary head "to be successful in Japan...will spend fifty per cent of his time on personnel" (1990:17).

⁵¹Larger Japanese companies are generally seen as more prestigious owing to a combination of stability and job security, an employee base comprised of alumni from elite universities, large market share and prominent brand recognition, and world class leadership.

⁵²As a consequence they feel uncomfortable next to new employees with a good education and a working ability in both Japanese and a foreign language, such as the female employees in the third category.

with them into the foreign affiliate, particularly if they are from joint venture partners or prestigious firms to whom they feel a strong attachment. One example is performance appraisal based on team leadership rather than short-term profit (Hamada 1991: 171), various notions of hierarchy and seniority, and loyalty.

With regard to norms relating to hierarchy, Hamada (1991: 189-190) describes a fiasco arising from the differing expectations of Japanese and American partners in a joint venture with regard to the joint venture's president. The candidate for president suggested by the American partner was very capable, but "still relatively junior in the parent company's hierarchy." The Japanese partner preferred a president who was senior and well-respected. The American's choice was installed, and failed as the Japanese parent feared. The young fast-track joint venture president "had to deal with directors in the Japanese parent who were far his superior." The American partner learned from this bitter experience "to appoint a relatively senior man for a top managerial job. A young manager, no matter how capable, cannot get other managers to work for him because he is not regarded as equal or superior to them." Huddleston further notes that the typical Japanese general manager would not be willing to speak up to the parent CEO when the CEO is wrong (1990:13) due to a similar respect for authority.

With regard to loyalty codes and norms, the employees of joint ventures in which the American partner has even 50% equity tends to be more loyal to their Japanese parent company than to the joint venture and tends to follow the directions of the Japanese parent, which may not be in the interests of the joint venture, in that many of the joint venture's employees came from the parent company with a strong sense of attachment to the parent company (Hamada 1991: 151)⁵³ may result from Japanese norm involved with *shukko* or employee transfer between firms and their

⁵³With regard to hiring Japanese employees, in Japan, you are who your company is--no more, no less (Huddleston 1990: 37).

suppliers or related companies, allowing for continuing employment (*tenzoku*.) for employees no longer directly sustained by the larger firm. In this system, employees might be moved to different subsidiaries or affiliates as continuing employees, but still belong to the parent company's industrial group. As a result, "their corporate culture is based upon the solidarity of the industrial group" (Hamada 1991: 167). When being transferred to joint venture firms, these employees carry these same norms into the new firm, in contrast to American norms in which the American parent firm's managers might presume that a man who quits one job and starts another would psychologically turn a new leaf in life and begin a brand new career, just as many do in the U.S (Hamada 1991: 150).

The third category of employee bringing certain norms into the firm is well-educated female employees. For many foreign companies in the non-manufacturing sector, women will comprise the majority of their employees. Huddleston suggests that women can be a valuable resource, in being probably a foreign company's only access to employees with a first-class education. He patronizingly notes that young women from good families can be of great assistance in giving class to an organization and in maintaining the proper equilibrium (Huddleston 1990: 35, 42,43).⁵⁴ In particular, he (1990: 35) points to the general manager's secretary as an extremely important employee, in that her conduct and her ability to interact internally with the staff can be crucial to the success of the foreign general manager. Many outsiders will judge the foreign general manager, who cannot speak Japanese over the phone, by his

⁵⁴Here, Huddleston also patronizingly notes that Japanese parents are often willing to let their daughters work in foreign corporations as an internationalization experience and a chance to use English. It is particularly attractive to girls from upper middle-class and wealthy backgrounds. These entry-level young women should be investigated like all other employees, and the basic Japanese criterion that they be living at home or with relatives should be maintained. That she can neither drink in the bars at night nor play go with the boys on the weekend is just a fact of life. A company will have plenty of mates who can and are more than willing to do so if the company picks up the tab.

secretary. In turn, the secretary will be judged by the way she speaks Japanese.⁵⁵ Interestingly, Huddleston notes that the employees in a foreign company usually have little in common socially or educationally (Huddleston 1990: 41).

Local responsiveness through mimetic isomorphism.

The 1983 McKinsey study observes that, "Successful foreign affiliated companies...tend to emulate the hiring practices of leading Japanese firms that select new college graduates and train internally" (1983:39). Mimetic isomorphism comes from the organizational desire to imitate other organizations, when there are either a daunting array of potential responses or models to be considered or when the situation or options are unclear. Organizations tend to model themselves after similar organizations in their field that they perceive to be more legitimate or successful. Obvious examples of copying Japanese practices include: Japanese-style university recruiting, and promoting the company through recruiting books. Having the personnel manager be a Japanese manager with experience in the personnel department of a Japanese firm also increases the likelihood that he will copy the practices of his previous employer in the current company.

Responsiveness to local coercive isomorphic pressures.

Coercive isomorphism, the formal and informal pressure exerted by one organization on another as a condition for its support or approval, occurs where organizational patterns are imposed by a more powerful authority, usually the state, sometimes a joint venture partner, powerful supplier, distributor, or industrial group leader. Legal and technical requirements, such as the budget cycle, financial reporting, public disclosure, and registration, are examples of such coercive pressure.

⁵⁵Huddleston comments that Japanese requires a good education and upbringing in order to be spoken properly, especially for women.

The second half of the chapter traces the history of Japanese regulation toward foreign direct investment, highlighting coercive isomorphism from the government. Even as late as the early 1970s, the Japanese government insisted that the position of the foreign-Japanese joint venture president be held by a Japanese (Hamada 1991: 144).

More recently, American firms in Japan experience joint venture partners, industrial groups, and distributors as forcing them to reorganize the way they do business.⁵⁶ Joint venture partners can exercise relatively unrestricted dominance due to vague contracts, knowledge of the Japanese market, and gaps in preparation or knowledge on the American side. Japanese joint venture partners often believe the new company should be administered mainly by the Japanese parent because they have more experience operating a Japanese company (Hamada 1991: 144). Further, the Japanese parent often sees the new joint venture as part of the parent company's industrial group. Uniformity with the other firms in the industrial group in accounting procedures can be very important (Hamada 1991: 166). In addition, part of the firm's distribution network may be through large trading companies or through exclusive wholesalers, both of which have set paths of distribution through middlemen which the American partner has difficulty changing, despite their own best efforts and those of the American government (e.g. the Strategic Impediments Initiative) (Hamada 1991: 182).

Imprinting as a result of responding to local market openings at a given time.

Opening the Japanese market in distinct phases created conditions for uniform market entry and imprinting of American firms along lines such as those outlined by Stinchcombe. Stinchcombe (1965: 154) suggested that certain types of organizations were formed a certain times in history, and that typically, organizations formed at one

⁵⁶With regard to distribution, a few firms such as Coca Cola and Avon have circumvented this pressure by installing their own distribution networks in Japan.

time have a different social structure from those formed at another time. He also noted that the basic features of various industries that have varied systematically by time of the company's founding typically include: the characteristics of the labor force, establishment size, capital intensity, relative size of the administrative bureaucracy, relative size of the staff vs. line personnel, and proportion of professionals within the administration (1965: 153-64). Once established, an organization of a given type tends to retain the basic features acquired at their origin.

Along the lines of Stinchcombe's definition of imprinting, American manufacturers in Japan demonstrated at their founding a particular combination of economic, technical, and social resources, due in large part to the nature of their nationality and the compressed period of market entry for the majority of firms. The spurt of entry into Japan during the 1970s with the devalued yen represented an advanced technological base (provided in many cases by the parent organizations), sufficient capital, and a trained labor force willing to venture out away from traditional career paths in Japanese firms, as well as an appropriate organizational form perceived to be legitimate by the Japanese business community (see Scott 1987: 160). Particularly in the case of foreign firms in Japan, conditions such as the government relaxing foreign investment regulation had to be in place for many of these organizations to begin operations in Japan. In addition, the larger cultural norms of the Japanese business environment had to support these foreign ventures, and their goals and methods of reaching those goals had to be regarded as legitimate.

Thus, period and contextual effects here refer to those effects on foreign-affiliated firms at the time they enter a foreign market. Westney (1989) notes other similar extensions of imprinting at the country level by theorists of late development (Gerschenkron, Dore, and Cole) and by some recent work in international management on country effects on the competitiveness of firms (Kogut 1986).

Expanding on Stinchcombe's (1965: 154) suggestion that basic features of various industries have varied systematically by the time of the company's founding, literature on American firms entering the Japanese market indicate that this subset of American firms in various Japanese industries also varies systematically by time of the company's market entry in terms of: the characteristics of the labor force, establishment size, capital intensity, relative size of the administrative bureaucracy, relative size of the staff vs. line personnel, and proportion of professionals within the administration (1965: 153-64), as well as technological advancement, product differentiation, and product quality. McKinsey's findings indicate that successful American firms in Japan "appear to share one or more of four basic preconditions when they entered the (Japanese) market: a resource-driven product; a technological lead; a "new-to-Japan" concept; or a differentiated marketing strategy" (McKinsey 1983: 38). McKinsey further suggests that the firms that survive in Japan are characterized by patience in waiting longer for profitability than in the U.S., creativity in looking at a obstacles as a challenge, and competitiveness in the firm's willingness to take the plunge ahead of market leaders (McKinsey 1983: 39-41).

Evolution of Japanese government regulation on foreign direct investment.

Foreign direct investment in Pre-war Japan.

In 1616, the Tokugawa government, in order to strengthen its domination over feudal lords and to stamp out Western influences, especially those of Christianity, ordered all European ships confined to the two ports of Nagasaki and Hirado. Subsequently, in 1623 the English gave up Japan trade as unprofitable. In the next year the Spanish were expelled, and in 1635 all Japanese were prohibited from going abroad or from returning home if already overseas. In 1639 the Portuguese were

expelled, and in 1641 the representatives of the Dutch, who were the only remaining European traders, were moved from Hirado to a tiny island called Deshima in Nagasaki harbor. Thus Japan closed her door to the world and slipped into a peaceful isolation in the mid-seventeenth century.

From 1640 through the 1850s, Tokugawa Japan was closed to most trade and investment abroad. With Perry's arrival in 1853 and the Treaty Settlements in 1858, local authorities did permit some capital outflows in those ports opened to admit foreigners in order to facilitate foreign commerce without allowing local production on the part of foreign firms.⁵⁷ These treaties specified that: 1) foreigners in Japan were to remain under their country's law under extra-territoriality privileges, 2) foreigners could establish commercial and residential premises in designated foreign settlements in Japan, and 3) trade was to be entirely free of fiscal intervention and subject to low tariffs.⁵⁸ While allowing for a stable system of rule by isolating Japan from destabilizing foreign influences, Japan's two centuries of isolation, however, slowed its technological, political, and social changes, at a time when the West was accelerating such changes. This lag later caused the Japanese to make frenetic efforts to catch up with the West in the late nineteenth and early twentieth centuries.⁵⁹

⁵⁷With the arrival of Perry and his black ships, the term "black ship syndrome" was born. Later in the 1970s, the term came up again for common use in the Japanese mass media to describe Japan's fear of possible economic domination by giant American multinationals.

⁵⁸On July 29, 1858, the Tokugawa Shogun's Regent Ii reluctantly agreed to sign a trade and commerce treaty with the United States, presented by American Consul Townsend Harris. During that summer, the Dutch, Russian, and British representatives made similar arrangements. The French envoy arrived in September and completed a treaty early in October. On March 24, 1860, a group of samurai attacked and assassinated Regent Ii for "dishonoring our divine land" by dragging Japan into a humiliating position under "Free Trade Imperialism" (Beasley 1990:34).

⁵⁹The Tokugawa era was a period of great cultural and economic prosperity. By turning inward, the Japanese developed their own cultural identity. Their extraordinary cultural homogeneity was also the product of the whole Tokugawa system of control, particularly the institution of "alternate residence" of the lords. The Tokugawa government sought to control feudal lords through the holding of hostages and periodic attendance and service of the vassal at the lord's court. The government asked feudal lords to send their wives and heirs to Edo (the capital city of the Tokugawa regime, later the city of Tokyo) in 1633. In addition, attendance at the Edo castle was made into a rigid compulsory system around 1635. Both the hostage and the "alternate attendance" system forced each feudal lord to travel back and forth between his residence in Edo and his home province every other year (Hamada 1991: 222).

In 1868, fifteen years after the arrival of the "black ships," the feudal Tokugawa government collapsed and the sovereign power was passed to the then fourteen-year-old Emperor Mutsuhito, later known as the Meiji Emperor. The Meiji Restoration (1868) marked the beginning of Japan's modern era and rapid move into industrialization.⁶⁰ The new leaders of the Meiji government perceived economic development and military strength as a means for Japan to ensure national security. This perception was accompanied by a reversal of Japanese attitudes towards Western nations, from *sonnojoji*, or the "Revere the Emperor, Expel the Barbarian" mentality of the late Tokugawa period to *wakon-yosai*, or "Japanese Ethics and Western Skills" of the early Meiji (Hamada 1991: 222). In 1899, the Meiji government explicitly permitted foreigners to invest in joint ventures and wholly owned subsidiaries in the domestic Japanese market. Yet, even after the Meiji liberalizations, only a few American multinationals invested in Japan. The first was Western Electric, which entered immediately after the 1899 liberalization with a majority U.S. owned joint venture, Nippon Electric Company (NEC) (Mason 1990: 175-192).⁶¹

⁶⁰Home Minister Okubo Toshimichi, one of the most important members of the Meiji leadership, argued that Japan's industrialization could be attained by direct patronage and encouragement of the government. The imperial government provided an infrastructure and financial mechanism to channel capital into appropriate directions to fund the initial stage of industrial growth. Japan did not receive heavy capital inputs from foreign countries and had no considerable foreign debt before the Russo-Japanese War (1904-1905). Meiji Japan began to build strategic industries on which modern military power depended. The Meiji government inherited from the Tokugawa government two shipyards, one at Yokosuka and another at Nagasaki, and added yet another at Hyogo (as Kobe was called). It also operated large ammunition and weapons factories in Tokyo and Osaka, and three gunpowder plants. The government adopted an open-door policy for international trade, and after victory in the Sino-Japanese War (1894-95), Japan began to accept foreign direct investment through joint ventures. Early U.S.-Japanese joint ventures founded during that time included Nippon Electric Company (NEC), International Petroleum, and Osaka Gas.

⁶¹Western Electric took advantage of an 1899 revision in the Japanese Commerce Law, which permitted foreign firms to invest in Japanese companies, to set up Nippon Electric with a 54 percent capital participation. Western Electric sent several directors to head the board of Nippon Electric, and Western Electric gained management control almost immediately (Onozawa 1982). Later, after the Russo-Japanese War (1904-1905), when Japanese industries began to depend heavily on foreign technology and capital for expansion, General Electric Company (GE) invested in Tokyo Electric Company. Tokyo Electric, then a major electric lamp maker, was having difficulty in competing with imports and saw a joint venture with GE in 1905 as a way to overcome financial crisis. The newly beefed up Tokyo Electric Company became the largest electric company of its kind in Japan and quickly monopolized the electric lamp market, later merging with Shibaura Works, a telegraph equipment maker, to form what is today known as Toshiba Corporation.

While the *zaibatsu* sought to maintain tie-ups with foreign companies in the early twentieth century, the military initiated action to order foreign capital eliminated from Japanese firms. As Japan slipped deeper into militarism cum ultra-nationalism, Japanese-American business ties grew increasingly precarious. By the early 1930s, it became practically impossible to import parts. Rigid restrictions were placed on all products. Later the Japanese government froze all U.S. capital in Japan in retaliation for the seizure of Japanese Americans' property by the United States Government. With the approach of the Pacific War, especially after 1937, the Japanese government blocked foreign remittances and then in 1938 cut back foreign permits for automobile assembly kits, effectively freezing foreign automobile investment (Mason 1992: Ch. 2).

The rise of Japanese militarism and the eventual outbreak of World War II created a crisis situation for foreign investors in Japan. Between 1929 and 1941, American foreign investment in Japan fell by almost half (from \$63B to \$33B). The outbreak of the Pacific War on December 7, 1941 put a final and complete hold on all U.S.-Japanese business activities. Many foreign firms left Japan, but a few like National Cash Register showed amazing tenacity under extremely harsh conditions.⁶² During World War II, the Japanese government expropriated and dispersed the few remaining American assets in Japan.⁶³

Early Post-war foreign direct investment in Japan.

Post-war foreign investment in Japan falls into several distinct time periods corresponding to Japanese regulation of foreign investment: 1) pre-liberalization,

⁶²In the early 1930s, it became impossible for Japan National Cash Register to import iron and parts for local cash register manufacturing, halting local production. As the war was declared, Japan National Cash Register was placed under the management of the Finance Ministry. By then the American managers had left the scene, but Japan National Cash Register's fifty some years of work was continued by its Japanese staff, even during the war years (Hamada 1991: 229).

1945-1963, 2) capital liberalization, 1964-1973, and 3) post capital liberalization, 1974 to the present.⁶³ During Japan's immediate postwar recovery, two major income sources included American economic aid and U.S. military expenditures.⁶⁴ With the end of World War II, numerous prewar foreign investors petitioned the Allied Occupation for the recovery of previously nationalized assets, but nearly all of their petitions were rejected (Mason 1992: 514-518). One area of foreign capital entry during the occupation was in the petroleum industry. Five major oil companies--Shell, Caltex, Tidewater, Union, and Stanback--organized the Japan Oil Storage Company (JOSCO) in order to supply fuel to the Allied Powers in Japan.⁶⁵

The Occupation's postwar regulatory regime drew heavily on Japan's prewar system of trade and capital controls. Along with attempting to break up the *zaibatsu*, the Occupation extended capital controls to the foreign partners of these *zaibatsu* firms. Specifically, the Allied Occupation constructed the two primary foundations of Japan's postwar regulatory regime: the Foreign Exchange Control Law of 1949 (FECL), followed in 1950 by the Foreign Investment Law of 1950 (FIL). The Foreign Exchange Control Law of 1949 granted the Ministry of Finance control over nearly all foreign exchange transactions, while the Foreign Investment Law of 1950

⁶³This section is based on Mason 1992, Encarnation 1992, and Hamada 1991.

⁶⁴At the end of the war in August of 1945, Japan lay in ruins, its industries destroyed, its capital depleted, and its technologies outmoded. One of the first major postwar joint economic policies of the Supreme Commander for the Allied Powers (SCAP) and the Japanese government was to designate several key industries such as steel, coal, electric power generation, and chemical fertilizer as top priorities for industrial restoration. The American Occupation Force began to provide food, medicine, fertilizer, petroleum, and other essential commodities in order to assist Japan's economic recovery. Total American direct aid was terminated in 1951, but the outbreak of the Korean War at that time put Japan in the midst of the first postwar economic boom.

⁶⁵The petroleum section of SCAP controlled Japan's total oil supply. In June 1946, the Petroleum Distribution Public Corporation was established, and in August, Standard Oil, Rising Sun Oil (Shell), and Caltex were allowed to sell oil to residents of the member countries of the Allied Powers. From 1948 to 1949, SCAP started to encourage the recovery of the oil industry in Japan. Most of the Japanese oil companies except three--Maruzen, Nihon-kogyo, and Daikyo Oil--made capital investment agreements with large world oil companies. Showa-Shell, Nisseki-Caltex, Toa-Stanback, Koa-Caltex, and Mitsubishi-Tidewater were among them. Because of the unique setup of foreign-related oil companies in Japan, which were originally protected and encouraged by SCAP, their oligopoly in the market is still evident. The petroleum industry today is still largely in foreign hands, rather exceptional for Japan.

expressly extended the Ministry of Finance's exchange controls to include foreign enterprises operating in Japan.⁶⁶ The Foreign Investment Law (Law No. 193, May, 1950) provided that any earnings or patent royalties could be taken out of Japan without reference to foreign exchange control, once it was approved by the Ministry of Finance, thus providing control over the introduction of technology and foreign capital to the Japanese market. In addition, the Foreign Investment Law of 1950 granted the Ministry of International Trade and Industry and other government agencies a broad range of ill-defined powers intended to guarantee that proposed investments would contribute to "the development of essential industries or public enterprises" or to "the improvement of the international balance of payments."⁶⁷ To avoid loss of control over its own economic development, Ministry decisions were made in close consultation with those Japanese enterprises most directly affected by such decisions. Further, strict conditions usually were attached to investment approval and the proposed venture had to be seen as being in Japan's national interest, which came to mean introduction into Japan of unique technologies that could not otherwise be acquired.

It has been said that "the biggest area of U.S. investment in Japan has been in the licensing of patents and technology."⁶⁸ During the 1950s only 101 new investment permits --totaling less than \$60M--were approved under the Foreign Investment Law of 1950 (Ozawa 1986: 148). Through 1963, \$235M was invested in 209 projects under the Foreign Investment Law of 1950. Majority U.S.-owned subsidiaries remained especially rare in Japan; in fact, through the 1960s, their meager domestic sales failed to exceed otherwise restricted U.S. exports to Japan (Encarnation 1992: 39).⁶⁸

⁶⁶The Foreign Exchange and Foreign Trade Control Law (Law No. 288, December 1, 1949).

⁶⁷Article 8, the Foreign Investment Law, No. 163, of 1950.

⁶⁸IBM was one of a few exceptions where the Japanese government allowed 100 percent direct investment in Japan during the 1950s. The Japanese government faced a dilemma between its need to

Encarnation (1992: 50) notes that prospects for investment in Japan did improve whenever a foreign investor sidestepped provisions of the Foreign Investment Law of 1950 to participate instead as a "yen-based company," companies established through the reinvestment of domestically acquired yen into existing businesses.⁶⁹ While these yen-based firms faced little restriction on investment and no restriction on percentage of ownership (which allowed foreign parent firms to move capital into Japan freely), they were not allowed to seek foreign exchange for the repatriation of profits and fees.

Initiation of limited capital and trade liberalization (1956--1960).

In 1956 the Japanese government designated a second class of yen-based companies including American and British MNEs eligible for "national treatment" as a result of their country's bilateral commercial treaty with Japan. In exchange for national treatment, foreign investors could remit dividends or principal only after

gain access to advanced foreign technology and its wish to develop the domestic computer industry. If the government refused its entry, IBM could have refused to license its patents to all interested Japanese producers. In 1957 the first legislation in the computer field was enacted (The Electronic Industry Development Act), which, prepared by MITI's Heavy Industry Bureau, established the outlines of governmental assistance programs and fund allocation. The Electronic Industry Deliberation Council was formed within MITI and was later renamed as the Electronic and Machinery Industries Deliberation Council in 1971. The council consisted of bureaucrats of MITI and the Ministry of Finance, presidents of major electronic and machinery companies, representatives of the industry's trade associations, and scholars. The act authorized direct governmental loans to assist manufacturers in commercializing electronic products. Although the governmental assistance did not cover a major portion of manufacturers' research and development and production costs (the total subsidy during 1957-61 did not exceed \$1 million), it provided favorable conditions for them, one of which was MITI's authority to selectively exempt any portion of the electronics industry from the Anti-Monopoly Law.

MITI's aim was to strengthen the Japanese computer industry, which promised future export markets and relative freedom from fluctuation in values of raw materials. As Japanese computer producers began to expand their capacity, they sought basic electronic data processing equipment patents held by American computer companies. IBM, which held many basic patents, had a relative advantage over others to negotiate the establishment of a 100 percent Japanese subsidiary with the Japanese government. IBM offered, in exchange for the establishment of a 100 percent subsidiary, the supply of some basic patents, but not know-how, to Japanese producers (Hamada 1991: 235).

⁶⁹ In addition, almost any foreign company could establish a branch office in Japan from 1949, for the Foreign Investment Law of 1950 did not regulate such businesses. In practice, however, this mode of entry proved unpopular because the Foreign Exchange Control Law of 1949 empowered the Ministry of Finance, at its discretion, to block both the outflow of remittances from those branches and the inflow of investments to them. The Ministry of Finance typically rejected such inflows when the branch attempted to engage in manufacturing as distinct from sales. (Ozaki 1972: 111).

securing foreign-exchange licenses under the Foreign Exchange Control Law of 1949—a task that, in practice, proved virtually impossible.⁷⁰ Through 1963, foreign multinationals had invested under \$86M in 289 yen-based companies, and 74% of the 342 majority subsidiaries that entered Japan before 1964 did so as yen companies, among these: Exxon, Kaiser Aluminum, Scott Paper, Hoechst, and Olivetti (Mason: 1992: Ch. 4).⁷¹

Phased liberalization of capital controls (1966) and accelerated trade and capital liberalization (1971).

The next phase of foreign investment into Japan was from 1964-1973, starting with Japan's joining the Organization for Economic Cooperation and Development (OECD) and distinguished by first phased liberalization and then by the abolition of most trade and capital controls. With yen convertibility in 1964, the yen company avenue for direct investment was closed, and all direct investment required specific government screening and approval. From 1964-1973, most foreign companies could only receive permission from the Japanese government to do business in Japan if they formed a joint venture partnership. The government liberalization policies thus turned out to be more restrictive than before. The initial reason for control over foreign investment was that the economy was still composed of infant industries with little capital and technology, thus perceived as requiring protection in the national interest. Secondly, many important Japanese companies were undercapitalized and thus attractive as potential acquisition candidates for foreign firms. Hence, the government regulated tightly the acquisition of shares in existing Japanese companies, fearing

⁷⁰Even foreign companies established in Japan before the war required specific government approval in order to transfer goods, capital, or technology to their ventures in Japan. If capital was transferred into Japan without government assurance and approval, capital and earnings could not be repatriated unless or until the yen became convertible.

⁷¹When permitted to choose between majority foreign ownership and the repatriation of yen profits, most multinationals preferred larger shareholding. Foremost among these multinationals was IBM, which remained 99% American owned (Encarnacion 1992: 53).

foreign investment might not keep the best interests of Japan's developing economy at heart.

However, around 1966, the Japanese government underwent a great debate about liberalization, the opening of Japan to foreign trade and investment. In the first capital liberalization of 1968 liberalization decisions created four categories of varying degrees of liberalization: 1) industries in which no liberalization occurred, 2) industries which foreign investors could enter only after a case-by-case screening, 3) industries in which the Japanese government preferred joint ventures to 100% foreign ownership, and 4) industries in which 100% foreign ownership was automatically approved. The first category of industries excluded from liberalization focused on public and security-related fields and included nineteen industries. The second category in which foreign investors could enter only after a case-by-case screening encompassed such industries as: electronic computers and computer peripheral equipment, data processing, oil refining and sales, retail chains of more than eleven stores, agriculture, forestry, fishery, real estate, and leather products, though the definition of industries was so broad that one industry actually meant several industries. The third category allowed up to 50% foreign ownership to be automatically approved because the government felt that the industries needed further development to compete with foreigners. The third category included: electric appliances, radio, television, cameras, watches, synthetic fibers, records, ammonia fertilizer, and glass plate industries. The fourth category included seventeen industries in which 100 percent foreign ownership was automatically approved: ordinary steel, bicycle, cement, cotton, and piano and organ manufacturing. Some industries in this category produced only one product, in contrast to those in the second category.

In the second liberalization (1969), the Foreign Investment Deliberation Council automatically approved 100 per cent foreign ownership in an additional

twenty industries bringing the total number of industries in this category to 44, including: steel, electric bulbs, electric appliances, fluorescent lights, boilers, textile machinery, fish meal processing, etc. In the 50 percent category, 135 industries were newly added (160 industries in total), including automobile tires, ceramics, detergents, medical equipment, toys, wholesale (including exporting), and specialized retail shops. The Foreign Investment Deliberation Council tried to include some industries that were attractive to foreign investors in the 50 percent category, such as wholesale and specialized retail industries.

In the third liberalization (1970), such major industries as the computer, automobile, and petrochemical industries were excluded in the second round of liberalization, which invited severe foreign criticism of governmental protectionism. Having balanced the mounting foreign pressure and the self-interests of Japan, the government announced in September 1970 the third liberalization, and also the schedule for the fourth liberalization, which would be half a year earlier than originally planned.

Spurred by the Kennedy Round negotiations of the GATT (1963-72), Japan dismantled much of what had remained of its postwar trade regime; in August 1971, they announced the final round of capital liberalization and private regulation replaced public regulation.⁷² Foreign capital entry in Japan, which reached a peak of 255 million dollars in 1972, dropped to 160 million in 1973, reflecting the value change of the yen. Japanese overseas investment, on the other hand, jumped up to 3.5 billion dollars in 1973 alone (Hamada 1991: 125).

Subsequently, in 1973, the Japanese government liberalized investment policy and allowed 100 per cent direct foreign investment into new or existing Japanese companies, so that Japan became as open to foreign capital investment as any other of

⁷²Private regulation primarily consisted of distribution, industrial groupings, cross shareholding, etc.

the OECD countries.⁷³ Yet liberalization yielded only modest outcomes, as officially sanctioned private restrictions on foreign investment and related trade slowly replaced government relations (Encarnation 1992: 40). Encarnation notes that

evolution in Japan's strategic investment policy did not come easily or quickly, nor was it initiated by the Japanese. On the contrary, the principal initiative for change came from the American multinationals. Only a few such multinationals greatly influenced the course of Japanese policy, so that each could be singled out by name and eventually heralded by the Japanese as a foreign "success story" (1992: 40).

By the mid-1970s, regulations eased and firms were free, with few exceptions, to have wholly owned subsidiaries or branches in Japan.⁷⁴ The government's allowing wholly owned subsidiaries suggests a growing confidence in the strength of domestic industries vis-a-vis foreign competition. While many former joint ventures have been bought out by one or the other partner or terminated, many foreign companies prefer joint ventures as a means of acquiring personnel and supposedly more rapidly accessing the Japanese market. On the other hand, interviews with several subsidiary heads indicated a developing philosophy that wholly owned subsidiaries maintained proprietary technology better and represented greater commitment to the Japanese market to Japanese customers.

Formal capital controls were abolished with the Foreign Exchange Control Law (FECL) of 1980.⁷⁵ In 1983-4 the dollar-to yen appreciation reduced the dollar

⁷³By this liberalization policy, 100 percent automatic approval of foreign direct investment was granted to all industries except agriculture, fishery, oil, mining, and leather manufacturing (five exceptional industries), and seventeen industries that were to be liberalized in the mid-1970s. The seventeen industries included integrated circuits, meat processing, apparel manufacturing and wholesale, pharmaceuticals and medicine for animals, medical and electric measuring instruments, hydraulic machinery, phonograph records, and fruit juice. The computer industry was 100 percent liberalized in the mid-1970s. The importation of computers was liberalized on December 23, 1975, and the software field was liberalized in April 1976.

⁷⁴By 1972, Japan had also cut its import quotas in half, from 161 to 79, where they would remain well into the 1980s (Komiya and Itoh: p.192).

⁷⁵Under the new law, foreign investment was limited only in agriculture, forestry and fishing, mining, petroleum, and leather and leather products. The first three areas paralleled restrictions permitted under the OECD agreements. In addition, the FECL-limited foreign ownership of eleven companies, mentioned by name, which were related to national security, public order, or welfare. They

cost of investments in Japan, at the same time diminishing the profitability of U.S. exports. Between 1982 (at the dollar's zenith for the decade) and 1988 (the dollar's nadir), the stock of U.S. foreign direct investment in Japan doubled from \$6.6 billion to \$16.0 billion. In 1985, thanks to the Plaza Accord, the yen appreciated. Through 1989, American auto makers and parts suppliers continued to invest in Japan in response to the daunting challenge back in the U.S. home market (Encarnation 1992: 95).

The Japanese regulatory environment in the context of coercive isomorphism.

In general, the Japanese regulatory environment enforced conformity of organizational ownership and inter-firm interaction with regard to technological transfer of American firms there. For example, prior to World War II, companies such as Ford and GM supplied 97% of Japanese automobiles by importing "knocked down" kits and reassembling them in Japan. In 1937, the Japanese government blocked Ford's remittances and then in 1938 cut back Ford's and GM's permits for "knocked down" kits, effectively freezing foreign automobile investment. (Mason 1992: Ch. 2). Later during the 1950s, MITI, in conjunction with Japanese oligopolists, typically insisted that the foreign equity participation was to be no more than 50%⁷⁶ (Encarnation 1992: 39).

The few exceptions of firms fighting against Japanese government control highlight the power of regulation as a form of coercive isomorphism. For example, Texas Instruments petitioned MITI in the early 1960s to establish a wholly-owned subsidiary for the local manufacture of semiconductors and sought patent protection

were Sankyo Co., Ltd. (narcotics), 25 percent; Katakura Industries Co., Ltd. (silk), 25 percent; Arabian Oil Co., Ltd. (oil), 25 percent; Fuji Electric Co., Ltd. (defense/electronics), 26 percent; Hitachi, Ltd. (defense/electronics), 30 percent; Tokyo Keiki Co. Ltd. (defense/aircraft), 32 percent; General Sekiyu, K.K. (oil), 49 percent; Showa Oil Co. (oil), 50 percent; Mitsubishi Oil Co., Ltd. (oil), 50 percent; Toa Nenryo Kogyo K.K. (oil), 50 percent; and Koa Oil Co., Ltd. (oil), 50 percent.

⁷⁶Fuji Xerox is one example of such a joint venture founded during this period.

from the Japanese government for its then revolutionary products and processes. However, the Japanese government was reluctant to grant patent protection in the absence of TI's agreement to license its technology, and only allowed TI to attain 10% direct investment through first setting up a joint venture with Sony and then buying back its shares after 3 years. In concession to MITI, TI agreed to "consult" with MITI about local production and agreed to make its proprietary technology available to Japanese companies for a 3.5% licensing fee (well below the percentage demanded elsewhere); TI granted its Japanese competitors an unprecedented concession. Licensing of its processes (not products) launched NEC's 1963 entry into the semiconductor industry. TI gained market share access otherwise denied to foreign competitors who were kept at bay by tariff barriers, capital controls, technology restrictions---at the price of disclosing its core technology to its Japanese competitors (Encarnation 1986:124, 1992:70).⁷⁷

Motorola provides another example of fighting the power of regulation. In 1975, Motorola entered the Japanese market in two-way radios to police departments and other government agencies. Regulators at the Ministry of Posts and Telecommunications refused to allocate to Motorola any frequency within the lucrative Tokyo-Nagoya corridor, thus denying Motorola a major market. The ensuing dispute over frequencies and standards subsequently inhibited the importation of American-made paging devices. In 1989, the Super 301 Structural Impediments Initiative secured a Japanese agreement to increase foreign access to the Tokyo-Nagoya market,

⁷⁷MITI set aside Texas Instruments' application for a long time in fear of its dominance over the future Japanese IC market if it was allowed to enter the Japanese market before the Japanese IC industry itself had even started. The delaying tactic of the Japanese government was strategically motivated.

When the Japanese government turned down Texas Instruments' request for a 100 percent subsidiary, John Connolly, the U.S. Secretary of Commerce, claimed that Japan's refusal of Texas Instruments' entry was a violation of the U.S.-Japan Treaty of Friendship, Commerce and Navigation. The allegation by Connolly that Japan had violated the treaty was successively renewed by American participants at the annual joint U.S.-Japan Meetings on Trade and Economic Affairs. The Business and Industrial Advisory Committee of OECD also supported this view.

largely at Motorola's urging (see Johnson 1987).

Organizational variables for studying American firms in Japan.

Expanding on Stinchcombe's (1965: 154) suggestion that basic features of various industries have varied systematically by time of the company's founding, literature on American firms entering the Japanese market indicates that this subset of American firms in various Japanese industries also varies systematically by time of the company's market entry in terms of: the characteristics of the labor force, establishment size, capital intensity, relative size of the administrative bureaucracy, relative size of the staff vs. line personnel, and proportion of professionals within the administration (1965: 153-64). Not much of the literature on American firms in Japan addresses these variables, so the American Chamber of Commerce in Japan commissioned Towers, Perrin, Forster and Crosby in 1991 to survey the employment practices of American companies in Japan. TPF&C surveyed 728 American Chamber of Commerce member firms in Japan and received a 28% response rate. Their report summarizes company data in terms of industries represented, length of time established in Japan, activities carried on in Japan, employee count, and ownership. According to their survey, 72% of the 204 respondents were engaged in sales or service. The manufacturing industries represented were grouped into chemical/petroleum (14%), pharmaceuticals/health care (12%), electronics /computing/telecomm (14%), food/consumer/sports goods (8%), and industrial/engineering (9%). As to activities carried out in Japan, a third of the respondents only carried on sales in Japan. Finally, with regard to employee count, 51% of the TPF&C respondents had an employee base of less than 100 employees (and therefore were relatively "small" in Japan).

As to length of time in Japan, 74% had been in Japan over ten years.

According to a 1987 survey by the Japanese Ministry of Labor, 45.8% of the 2600 foreign affiliated firms in Tokyo were established in and after 1979 when the exchange rate began to soar and boosted Japan's economy.

With regard to ownership, 58% of the American firms in Japan that they surveyed were subsidiaries of American parents, 30% were branch offices, and 12% were in joint ventures with Japanese partners. Dennis Encarnation notes, "Elsewhere, but seldom in Japan, American multinationals typically have invested in majority subsidiaries to produce and sell goods locally...(In general) American multinationals strongly prefer unrivaled equity ownership, with its related managerial control.....Only in Japan, in fact, do minority affiliates outsell majority U.S. subsidiaries." (1992: 36)

Thus, the TPF&C study included firms from both manufacturing and service, large firms and small firms, and firms with various proportions of American ownership. Clearly, the population of American manufacturers in Japan with over 50% American equity and over 100 employees is a subset of the participants in the TPF&C study. However, the TPF&C study does suggest that important variables in assessing American firms in Japan include industries represented, ownership, length of time established in Japan, activities carried on in Japan, and employee count. The research design chapter discusses justification of sample criteria in greater detail.

Endnotes

Brief Reviews of the American Books on American Operations in Japan in the 1980s and 1990s

McKinsey's early 1983 book, Japan Business: Obstacles and Opportunities, was written by a bi-national commission and assessed market entry and opportunities in Japan. With regard to market penetration, this study covers regulatory, cultural and distribution obstacles, with a myriad of charts comparing profitability, casualty rates distribution systems of American and Japanese companies. McKinsey then estimates the projected entry costs and pay out times of entering the Japanese market and goes on to lay out four successful product/service entry modes, the "fundamental traits of winners," "commitment indicators" and competitive indicators of leading foreign affiliates in Japan. In addition to surveying the reasons for success in Japan, they also survey reasons for withdrawal from the Japanese market. In the third part of the book, they then set out untapped segments open to entry in which U.S. firms are seen as having a clear lead. These "gold mine" industries in 1983 included financial services, computer software, medical equipment management, video rentals, and truck leasing. They break the book down by industry and lay out the keys to successful market entry in terms of the product, distribution, and the firm's organization. With regard to the product, they suggest assessing the Japanese market as to tastes, pricing, and technology lead of the foreign firm over the Japanese competition. With regard to organization of the foreign firm in Japan, they address issues of recruiting, critical skills, the Japanese subsidiary's position in the MNE, local responsiveness, and the risk entailed in market entry.

In contrast to McKinsey's market analysis, Robert C. Christopher's 1986 book, Second to None, is a compendium of anecdotal information about various successful American companies in Japan, but does not synthesize information or organize it along clearly identifiable issues. He begins by stating that "a great number of U.S. enterprises have scored remarkable successes in Japan, that the U.S. economic presence in that country is already formidable" (1986:3) and then rambles off on over two hundred pages of success stories without lining them up into any coherent arguments or suggestions. As with any pioneering book in a field, it may be necessary to be anecdotal in the exploratory phases of the field. Yet, to allow for generalization to other American firms entering Japan in the same industry or related product fields, subsequent books might summarize issues across companies, controlling for size, industry, technology, etc. They also might compare successful and failing strategies or give enough details to discern how a successful company went about succeeding. To follow up on Christopher's promise of laying out the obstacles to doing business in Japan and showing companies how to overcome them in areas such as recruiting Japanese employees, subsequent books might consider giving insight into the mechanics such as how to promote the foreign affiliated company's recruiting through books or how to contact professors and go about cultivating a relationship with them. This is a very handy book entertaining and informative anecdotes about successful companies in Japan, and it blazes the trail in exposing the general public to American firms in Japan.

T.W. Kang's 1990 book, Gaishi, tends to the opposite extreme of being too general without any specific examples or concrete suggestions for going about overcoming the "unique" obstacles to success in the Japanese market. He draws on his experience living and working in both Japan and the U.S., but his "insider's view"⁷⁸ is lacking in detail. His advice is too general to be of much help, and he has the consultant's love of acronyms, especially in his directives for success: QCDS, quality, cost, delivery, service. Too often he suggests the obvious, such as the fact that cost and quality are factors in any competitive market, but does not give the necessary details to go about implementing this general model. Further, when he discusses the conflicting pulls from the parent firm and the local environment, he suggests (p. 64, 140). He does not explain how to do this when it conflicts with demands from the local market. After applying the QCDS model to various aspects of the firm, he goes on to compare various personnel practices in Japan and America. Further, he indulges in

⁷⁸While he did grow up in Japan, his experience as a Korean with an American undergraduate education at Intel Japan seems to counter this slightly. Japanese would probably consider insiders to be Japanese graduating from Japanese national universities with long-term experience in large Japanese firms.

stereotypes such as American individualism and refusal to conform, giving a "hunter/farmer" analogy (1990: 73). Finally, he indulges in a practice common to management books on Japan: the text is sprinkled with over 50 Japanese terms more to a course on business Japanese than to a guide on doing business in Japan.

Jack Huddleston's 1990 book, Gaijin Kaisha, is more clearly organized along personnel and functional lines, the latter section covering research and development, manufacturing, marketing, sales, accounting, public relations, government relations, and the legal environment, among other items. Huddleston argues that success will depend on multicultural skills and language ability of foreign businessmen, as well as their knowledge and influence at the home office. Huddleston argues that much depends on the personal qualities of the general manager and having the right people in the home office, and spends the first chapter weighing the pros and cons of American vs. Japanese general managers, with their various Japan biases, product knowledge, ties with head office in America, etc. In the chapter on personnel, he covers recruiting with regard to female employees, university recruits, MBAs, mid-career recruits, young foreigners and integration of these various groups. He then goes on to discuss rules of employment, unions, defined responsibility, job titles, compensation/bonuses, and performance appraisal. The second half of the book is devoted to functional foci, from locating manufacturing plants and offices, to conducting research and development, marketing and sales, to the various methods of market entry from joint venture to acquisition. He concludes with brief chapters on the future of American business in Japan, the use of management consultants, and public relations as they pertain to dealing with accidents, recruiting, and promoting the company's product and image.

Only recently has the literature moved from "how to" books to studies focused on more organizational issues. Tomoko Hamada's 1991 book, American Enterprise in Japan, is a case study about managing cultural differences in an American-Japanese joint venture and promotes itself as "the first study dealing directly with the issue of acculturation of American firms in Japan" (p. 7). She first leads up to the Japanese-American joint venture by describe work in Japan and the Japanese partner prior to the joint venture, relying on interviews, questionnaires, and written reports. She then describes the evolution of the joint venture from the American perspective. When discussing the joint venture, Hamada provides excellent coverage of historical processes of the joint venture between 1972-1984. As an ethnographer, Hamada proposes to "take a feature film, not photography" to understand "the inner workings of the office by an intensive process of observing the people over a long period of time⁷⁹ and participating in their activities" (p. 7). As such, she was "directly involved in the decision-making process as an interpreter...(and)...observed the actual operation of the company, recorded the process of organizational adjustment, and noticed the people's sense of conflict and accommodation, which might not conform to an ideal" (p.8). Her exposure was certainly in-depth and some of her experiences very rich in detail, but her rendering of the joint venture's establishment, much like a feature film, is organized chronologically rather thematically. Unfortunately, her account takes place in the early 1970s when the rules were very different, making it difficult for firms considering entry today the reader to "understand the complexities and intricacies of cross-cultural management" through this case study (p.7). Early on, she makes the important point that, "Nothing has meaning except as seen in some context at a particular historical moment" (p.8). Organizations and practices evolve over time, so it is impossible to generalize beyond the immediate time horizon. In keeping with this, she concludes the book by providing a nice history of Japanese policy toward foreign investment from the Tokugawa period through the present.

Another recent book which explores the employment practices of American firms in Japan is Robert Ballon's 1992 book, Foreign competition in Japan. Human Resource Strategies. This book discusses hiring, the work environment, compensation, corporate structure, performance and promotion, decision-making and the market place in a very well organized way. This gives a good overview to employment practices from a macro perspective, providing some of the best compilations of macro-level data on ratio of retained employees by size of manufacturing enterprise, trends in newly hired employees, mid-career hires, and part-time employees; and average ages of *bucho* and *kacho* level managers by size of enterprise. He begins by placing the Japanese labor market into international perspective, discussing types of employment in Japan, labor mobility, and the aging work force, among other more typical HRM issues. He relies on a wide variety of studies conducted

⁷⁹This period of time spans 1977-1981, and the summers of 1985, 1986, 1987, and 1988.

by various Japanese ministries as well as other international organizations. He complements this later on in the book with several individual examples such as the outline of two university graduate successful careers in manufacturing. Taken together with a more anthropological book with a more richly detailed picture of a single organization, one would have a very well rounded view of organizational issues.

What still remains missing in the literature on the employment practices of American firms in Japan is the American version of Yagi's 1992 Sloan thesis on NKK's personnel practices. Yagi's thesis drew on his eight years as a personnel manager and traced the HRM practices, processes and procedures in his experience in rich detail, laying them out in a well-organized and thematic manner that allowed for easy reference.

Chapter 5: Personnel practices in context of routines, institutional theory, and the Japanese labor market.

Personnel practices highlight both: 1) a subsidiary's conformity to isomorphic pressures from the local environment and to pressures from the parent firm, as well as 2) the MNE's approach to global integration and local responsiveness in terms of human resources. First, I begin by discussing routines as the blueprint of the organization. Then I place personnel practices in the context of institutional theory. Following this, I examine them in the context of the MNE. Finally, I will lead into the following chapters on recruiting, performance evaluation, and training by providing a brief overview of the Japanese labor market and the classic model of the Japanese firm in order to better evaluate the evolution of these practices.

Practices and routines as the blueprint of the organization.

This study uses routines as a lens through which to examine organizations, drawing on the notion of organizations as bundles of routines (Kilduff 1992). Routines or practices here refer to regular and predictable behavioral patterns of firms including "characteristics of firms that range from well-specified technical routines for producing things, through procedures for hiring and firing, ordering new inventory, or stepping up production of items in high demand, to policies regarding investment, research and development (R&D), or advertising, and business strategies about product diversification and overseas investment" (Nelson and Winter 1982: 14). Routines capture much of the essential behavior of the organization in that "most of what is *regular and predictable* about business behavior is plausibly subsumed under the heading 'routine,' especially if we understand that term to include the relatively constant dispositions and strategic heuristics that shape the

approach of a firm to the non-routine problems it faces " (Nelson and Winter 1982: 115).

Routines have been called the "genes" that comprise each organization's identity (Nelson and Winter 1982). Nelson and Winter suggest that routines are a persistent feature of the organism and determine its possible behavior, which combined with the environment determine *actual* behavior. March and Simon suggest that knowledge of the programs that produce organizational routines can enable one "to predict in considerable detail the behavior of members of the organization" (March and Simon 1958: 143).

These routines can be understood as programs or standard operating procedures (cf. March & Simon, 1958), and constitute the micro foundations of organizational structuring. From this perspective iterated behaviors produce and reproduce structure. Interacting individuals succeed in creating complex structures beyond the power of any one person to comprehend (Weick 1979).

According to Nelson and Winter (1982:96) routines are the "source of continuity in the behavioral patterns of organizations." They are patterns of activity that can be invoked repeatedly by members and subunits. People age and die whereas the institutions they belong to may continue to be enacted by new generations of participants. One way of conceiving of routines is as organizational memory—an organization's repertoire of routines is the set of collective actions that it can do from memory. Nelson and Winter emphasize that organizations *remember by doing*. Like knowledge of elementary algebra or high school Latin, collective knowledge is the basis of organizational routines and decays rapidly with disuse. The work of the organization is continually recreated as employees engage in routinized exchanges that enact the familiar characteristics of the institution (Kilduff 1993: 6).

Routines as unconscious behaviors. Many routines are mindless in the sense that group members do not consciously select them each time a task arises. Rather, the deployment of routines is relatively automatic to the extent that group members share a common fund of assumptions and experiences. The actions of top managers, as much as the lowest subordinates, express underlying rules that may be opaque in their operation. In these circumstances, perverse outcomes and vicious circles not only occur, but can be self-sustaining. Actors create the environment that impinges on their subsequent actions (Weick 1979), but often do not recognize the results of their own behavior. Further, the individually motivated actions of participants in an institution such as a multinational serve to reproduce patterns of social relations that the participants themselves may not be aware of (Kilduff 1993).

Routines as a means of enacting the environment. In enactment theory, actors are said to create the environment that then impinges on their subsequent actions (Weick, 1979). From the enactment perspective, the same iterated behavior may occur for a variety of different reasons, and attention must be focused on the meanings attributed to behavior (Abolafia & Kilduff, 1988). Apparent behavioral homogeneity can mask heterogeneous goals, assumptions, and values (Weick, 1979; Donnellon, Gray, & Bougon, 1986). In Weick's model, retrospective sense-making can change the meaning of action.

Reproducibility of organizations. Nelson and Winter (1982) argue that routines, as the genes of the organization, are heritable, so that new spin-off organizations, factories, and branch offices may have many of the same

characteristics as the parent organization.⁸⁰ Although the routines that govern behavior at any particular time are, at that time, given data, the characteristics of prevailing routines may be understood by reference to the evolutionary process that has molded them. Further, Hannan and Freeman (1984) suggest that organizations possess relatively fixed repertoires of highly reproducible routines. With routines providing a repertoire of possible behaviors, routines imprinted at time of founding tend to persevere in all organizations (Stinchcombe 1965). However, environmental influences can affect actual behavior to the extent that "the feasibility of close (let alone perfect) replication is quite problematic" (Nelson and Winter 1982: 118). With regard to new organizations, as Stinchcombe (1965) points out, new organizations typically have to take time to work out routines. Initially there is much learning by doing and comparing alternatives. Existing organizations have an advantage over new ones in that it is easier to continue existing routines than to create new ones or borrow old ones (see the discussion in Nelson and Winter, 1982:99-107).

Many routines in organizations are neither obvious to see nor easy to reproduce elsewhere, as employees are often unaware of the routines they use. This is especially true of performance routines that depend on the interactive efforts of several people, none of whom understands the full sequence of interlocking behaviors (Weick 1979). Thus, random variations can alter routines so that diffusion across large loosely-coupled organizations may be imperfect (Weick 1979). Just as in the children's game in which a message is systematically garbled as it is whispered from ear to ear, so in organizations a routine transferred from one department to another may be transformed by the time it reaches a division in another country (Kilduff 1993: 16).

⁸⁰Further, these routines are selectable in the sense that organisms with certain routines may do better than others, and, if so, their relative importance in the population (industry) is augmented over time.

Routines in the MNE. Kilduff's 1992 research ties routines and their inertial effects into the theory of the MNE, highlighting the conflict in operating across borders in the clash of cultural norms underlying routines in MNEs, since routine behaviors often differ across national cultures. Given diverse cultural premises, the production of organization-wide routines may be difficult to achieve (Kilduff 1993: 15). The national origin of European managers, for example, significantly affects their views of what proper management should be (Laurent, 1983). Laurent's (1986) research shows that rather than combining the best of various culturally based routines when operating across borders, managers in MNEs appear to develop more extreme attitudes on scales measuring deep-seated cultural assumptions, relative to managers in culturally homogenous organizations.

Replication of routines in MNEs. This skilled task of social reproduction is all the more difficult in the case of the multinational enterprise (MNE) because it must be accomplished across national frontiers and cultural differences (Kilduff 1993). A complete set of organizational routines can be successfully transplanted if goals and motivations underlying these routines are fully compatible with the habits of those responsible for day-to-day implementation. Kilduff (1992) cites the Disney philosophy of cleanliness, orderliness, efficiency, and cooperative behavior as fully acceptable to the Japanese. On the other hand, the Volvo philosophy of decentralization, dialogue, and interpersonal relationships was somewhat alien to the business practices of French car dealers (Kilduff 1992).

An MNE, attempting to replicate an organization in one country that is successfully operating in another country, may try several stratagems for ensuring the fidelity of the duplication. The company can intensively socialize the foreign work force into the company's repertoire of routines. On the other hand, the

company can transport a select cadre of foreign workers to the original facility so that routines are experienced in the context of the local supporting cultural milieu.⁸¹

The MNE, its authority spanning the boundaries of nation states, invents for itself a governance structure that seeks to balance local demands and global vision (Prahalad & Doz, 1987). The ways in which this balancing act is maintained are fundamental to understanding the functioning of MNEs (Kilduff 1993:12). Do the parent companies of MNEs coerce subsidiaries into replicating the environment of their parent company? Do subsidiaries replicate the normative environment of their parent firms, or do they adapt to the local environment in which they are geographically situated?

Routines as coordination mechanisms. Kilduff (1992) builds on the notion of routines as informal coordinating mechanisms, along with other coordinating mechanisms such as communication, socialization, and employee transfer (e.g., see Prahalad and Doz 1987). Coordination in any organization tends to be facilitated by common procedures and assumptions. The MNE may seek to coordinate activities in its subsidiaries through the perpetuation of routines such as standard accounting, purchasing, or reporting procedures. Such commonalty may be more difficult to achieve and sustain in the MNE than in organizations operating within rather than across cultures (Kilduff 1993:4). The MNE, then, faced with discontinuities due to the flow of information and culturally bound routines across boundaries, may be less tolerant of heterogeneous attitudes and behavior than organizations operating in more homogenous environments. Anecdotal evidence suggests that some of the most successful MNEs exhibit the most rigor in enforcing procedures and norms across cultural settings (Kilduff 1993).

⁸¹In addition, the company can staff the top managerial positions with expatriates from the original operation. Further the company can try to replicate the physical appearance of the original.

Routines in the context of organization-environment theory. Hannan and Freeman (1984) propose that in general, organizations attain reproducibility of structure through processes of institutionalization and by creating highly standardized routines. With regard to institutionalization, reproduction of structure occurs without apparent effort in highly institutionalized structures in that institutionalization allows routines a taken-for-granted character such that members do not continually question organizational purposes, authority relations, etc. However, they also note that the very factors that make a system reproducible make it resistant to change. In particular, to the extent that an organization comes to be valued for itself, changes in routines or organizational structure are likely to foment collective opposition premised on moral claims in favor of the status quo. Even if such opposition does not prevail, it delays change considerably. As Nelson and Winter (1982:134) put it:

. . . it is quite inappropriate to conceive of firm behavior in terms of deliberate choice from a broad menu of alternatives that some outside observer considers to be "available" to the organization. The menu is not broad, it is narrow and idiosyncratic . . . Efforts to understand the functioning of industries and larger systems should come to grips with the fact that highly flexible adaptation to change is not likely to characterize the behavior of individual firms.

Hannan and Freeman argue that the properties that give some organizations reproducibility also make them highly resistant to structural change, whether designed or not. They suggest that some aspects of structure can be changed only slowly and at considerable cost (many resources must be applied to produce structural change). Such structures have a dead-weight quality; there are large lags in response to environmental changes and to attempts by decision makers to implement change. Since lags in response can be longer than typical environmental fluctuations and longer than the attention spans of decision makers and outside authorities, inertia often blocks structural change completely.

Routines and organizational inertia. Organizational inertia may also be a consequence of the balance of internal tensions within the organization.⁸² Kilduff (1992) suggests that the MNEs are subject to inertia in that routines are embedded in historical traditions that are highly resistant to change (Stinchcombe 1965). MNEs are, to some extent, "captives of their past" (Bartlett and Ghoshal 1989, p. 35). This relative inertia is important for the day-to-day functioning of MNEs in the face of volatile environments. Yet inertia in the MNE is likely to be under continual challenge as subsidiaries open in new cultures, and as the employee population becomes increasingly diverse. Paradoxically such challenges to taken-for-granted procedures may actually strengthen such procedures by leading to an explicit commitment by organizational members to adhere to what had been implicit norms (cf. Bettenhausen & Murnighan, 1985). In operating across many national borders with a variety of loosely-coupled subsidiaries, a large amount of resources may have to be devoted to simply keeping routines and other structured behaviors reliable from day to day (Kilduff 1993). Organizational inertia, from this perspective, is achieved only at great effort and cost (Hannan & Freeman 1984: 152).

Personnel practices as a means of studying the effects of isomorphism.

Institutional theory suggests that some of the aspects most likely to highlight the firm's adaptation to the environment are the practices, processes, and roles of employees. In order to compare a subsidiary to both its parent firm and the other firms in its local environment, I focus on personnel practices. Personnel practices provide a setting in which institutional isomorphism will likely play a powerful role in explaining behavior, since the performance standards for personnel practices are

⁸² Thus, it is a function not merely of a market demand for reliability and accountability (cf. Hannan and Freeman 1984) or a consequence of imprinting at the time of organizational founding (cf. Stinchcombe 1965).

not as clearly measurable by performance measures such as profit or market share as are manufacturing or sales (Westney 1989: 11; Meyer, Scott and Deal 1983). Similarly, since personnel department output is not clearly measurable and self-explanatory, there is an increased need for the personnel department to seek legitimacy and emulate leading organizations to rationalize or justify its choices. At the level of the personnel department, one consequence of isomorphic pressure is the rationalization and legitimacy of personnel practices because they cannot be effectively implemented if people do not perceive them to be fair and legitimate.

At the level of organization-environment relations, personnel practices are often the first organizational aspect to reflect pressure to change from the parent firm, competition, unions, media, government, and university relations (with regard to recruiting). For example, Cordell's interviews (1992) with IBM Japan indicate that originally IBM Japan's basic personnel policies reflected those of IBM U.S., but competitive pressures forced them to adapt to Japanese cultural expectations. As a result, the president of IBM Japan has made it his mission to make IBM Japan as "Japanese" as possible.⁸³ Similarly, one can draw inferences at the population level regarding the construction of the organizational field as discerned through relevant external reference groups as well as those groups' influence on firm behavior.

Not only does the home country environment shape the parent firm and the foreign environment shape the subsidiary, the home country environment may affect the subsidiary indirectly through the parent's influence. Further, the differences between these environments often create conflicting pulls in the headquarters-subsidiary relationship, which is often one of the central issues facing subsidiaries abroad. Thus, focusing on the organization-environment relationship puts the

⁸³Louise Cordell, *Fuji Xerox Benchmarking Study: Interviews with Jinichi Furuhata, Manager of Personnel Operations, and Eli Nakamura, Staff Member of the Personnel Department, IBM Japan, 1992.*

headquarters-subsidary relationship in the context of these varying environments and highlights many of the conflicting pressures on the subsidiary.

Human resource management in the multinational firm: local responsiveness and global integration.

Traditionally, multinational firms have focused on integrating production to capitalize on economies of scale and scope while at the same time differentiating products to respond adequately to local tastes and preferences. As such, the MNE's focus on local responsiveness, global integration, and shared learning has been limited to product feature differentiation, market segmentation, manufacturing rationalization, and competitor analysis. Yet shared knowledge and integration of functions such as manufacturing and R&D call for multinational firms to extend this locally responsive/globally integrated framework to the management of personnel as well. Integrating personnel practices that capitalize on shared learning and transferal of technology, skills, and expertise must also be balanced with differentiating some aspects of personnel practices to respond adequately to local labor markets.

On the one hand, the staffing of the subsidiary must be responsive to the local environment in order for the subsidiary to thrive. Particularly in the case of Japan, local responsiveness to Japanese personnel practices is critical for American firms to operate smoothly and successfully in the Japanese market. Huddleston (1990: 4) asks, "If foreign companies continue to disregard the history of Japan and of their company in Japan, the vast cultural differences, and the language of the country in which they are trying to function, can they ever hope to succeed?" Yet, when many different personnel policies exist across the multinational firm, they inhibit global integration of HR by constraining the flow of personnel between headquarters and subsidiaries in areas such as perceived fairness in compensation and promotion.

On the other hand, to exploit shared learning and economies of scope and scale, the firm must constantly balance local responsiveness and global integration and deal with issues of coordination. An integrative or "global" approach to the internationalization of human resources views all the subsidiaries together as part of the MNE. Global human resource strategies can facilitate the flow of personnel among subsidiaries thereby enhancing the MNE's competitive advantage as a network of information, knowledge and ideas (Bartlett and Ghoshal 1989, Prahalad and Doz, 1984: p. 55-72).

Personnel practices in the context of the multidomestic, global, and transnational approach.

However, the literature on the MNE does not address adequately the consequences of operating across national borders with varying employment norms and environmental demands. The following section first briefly introduces personnel policies in the context of the multidomestic, global, and transnational firms. It then looks more closely at recruiting, training, performance evaluation, and compensation in these contexts. The similarities and differences these approaches bring about in these practices are summarized in Table 5.1.

Multidomestic approach to HRM. Focusing only on local responsiveness, the multidomestic firm carries all functional activities (i.e., manufacturing, research and development, marketing, sales) independently in each country site. As such, this locally responsive or "multi-domestic" approach to personnel practices suggests that the MNE view each country as a completely separate entity and adopt and implement local human resource management styles accordingly. Subsidiaries are responsible for all aspects of personnel in the subsidiary, with the exception of the upper management assigned to the subsidiary by the headquarters. Hofstede (1980: see especially 271-278), suggests that national differences in an organization

explain 50% of the differences in employees attitudes and behavior. (National differences explain more than professional, age, gender, or race in his study.) In order to attract top Japanese from foreign firms given the high prestige of Japanese firms, the foreign firms that do best in Japan are those that are perceived to have stable employment practices.

Global approach to HRM. As discussed earlier, the global firm is one in which functions (i.e. manufacturing, research and development, marketing, sales), product lines, and technologies are integrated across national boundaries yet dependent on the headquarters for integration. In the global approach to personnel, the center for decision-making thus lies in the headquarters. The headquarters develops personnel policy for worldwide application with compatibility and adaptability to headquarters in mind. These activities are centralized exclusively in the headquarters and the subsidiaries are dependent on headquarters for these criteria to some extent.

The global approach further introduces the concept of an international cadre of managers. Jack Huddleston quotes a general manager in an American firm in Japan as arguing, "We need to develop a cadre of international talent and experience in business like the foreign service" (1990: 17). These managers are developed with the overall firm perspective in mind. Ideally, they have experience in managing several functions of the firm and have knowledge of several product lines. They are then cultivated by being rotated to learn from various subsidiaries and to transmit the information to headquarters and to other subsidiaries.

However, it is dangerous to assume that employees working for the same organization will automatically develop an attachment and loyalty to that organization or that company loyalty will cross national boundaries. Often people working for the same organization in two different countries are more different than

they are similar because national culture often exerts a stronger influence on employees than does organizational culture (Hofstede 1980). Moreover, people working outside their native country become more culturally oriented to their home country culture, particularly under stress: Germans become more German, French more French, etc.

Transnational approach to HRM. The transnational firm is one in which functions, product lines, and technologies are integrated across national boundaries in a network of interdependent units tightly coupled but dispersed across major markets, technology systems, and competitor home bases. Thus, the decentralized transnational approach in which all parts of the MNE contribute equally emphasizes local responsiveness, global integration, and shared learning. In the transnational approach to personnel, decision-making takes place around the centers of functional and product expertise. These centers develop personnel policy relative to their functions and products for worldwide application. A major challenge for the transnational is to manage a decentralized firm in which the center may not even be defined geographically and in which senior management will necessarily be multinational and multicultural.

Hedlund (1986) suggests that the transnational be characterized by more lateral rotation among subsidiaries in order for internationalization of norms to take place. He posits that it is no longer possible to promote people by mainly giving them jobs higher up; movement between centers will be more common. Hand in hand with this, a broader range of people in the firm must develop the capacity for strategic thinking and action. He further suggests that the international cadre of managers will consist of people with long experience in the headquarters. Finally, with regard to reward and punishment systems, carriers of bad news must not be killed.

Recruiting in the multidomestic, global and transnational firm.

A multidomestic approach to recruiting. In the multidomestic approach to recruiting, each subsidiary hires all its own mid-level managers, though the top subsidiary managers are still assigned by headquarters. Subsidiaries are not dependent on the headquarters for criteria and do not develop criteria for worldwide application. Hiring of mid-management track employees is decentralized, and compatibility and adaptability to headquarters is not considered as a hiring criterion. The advantages of the multidomestic approach to recruiting are that it is easier to hire locally and that it is quite appropriate for industries which reward local responsiveness. An example of rewarding local responsiveness is Kobrin's 1984 study which shows how MNEs neglect to use the expertise of host country managers for the assessment of political risk can have a very detrimental effect on those operations. On the other hand, the disadvantage of the multidomestic approach is that locally oriented hiring of mid-level managers can impede communications with headquarters and other subsidiaries.

A global approach to recruiting. In the global approach to recruiting, headquarters provides some input to subsidiaries in the form of providing criteria and hiring an international cadre of managers. In the extreme, in MNEs pursuing a global strategy toward HRM, all the subsidiaries form a single internal labor market that transcends the nationality of the employee. As such, the most appropriate person for a given job will be chosen from an international labor pool. The subsidiaries are dependent on headquarters for some hiring criteria for the managers likely to interact with other parts of the firm and generally leave the development of these criteria up to the headquarters. The hiring of the international cadre of managers tends to be very centralized, with an emphasis on compatibility and

adaptability to headquarters. The advantages of the global approach to hiring are that it enhances communication across units and encourages a more international perspective. The disadvantage is that the international cadre of managers can cause elitism and home country ethnocentrism in the subsidiaries.

A transnational approach to recruiting. In the transnational approach to recruiting, hiring is shared and criteria exchanged. New employees are hired with the potential for transfer in mind. The subsidiaries look to centers of expertise in products and functional areas for hiring criteria in those areas, and these centers of expertise develop criteria for worldwide application. These centers of expertise consider the compatibility of the subsidiaries' employees with their own goals, corporate cultures and people in planning future rotation and integrated learning. Further, selection criteria evolve as a result of shared learning. The advantage of the transnational approach is that it encourages developing expertise across subsidiaries. The disadvantage of the transnational approach is that it does not always take into account local constraints.

Training in the multidomestic, global, and transnational firm.

A multidomestic approach to training. In the multidomestic approach to training, each subsidiary trains its employees locally. The subsidiary is not dependent on the headquarters for training criteria and does not develop criteria for worldwide application, making training a decentralized activity. Further, compatibility with headquarters training programs is not necessary. The advantages of the multidomestic approach to training are that it is tailored to people's jobs and suitable for industries rewarding local responsiveness and efficiency. The disadvantage of the multidomestic approach to training is that it may impede the flow of products, information, and functional expertise across subsidiaries.

A global approach to training. In the global approach to training, headquarters provide some input into subsidiaries' training programs in the form of providing criteria and training an international cadre of managers. Accordingly, training to provide a global view of the firm can: 1) inculcate a common vision and shared values, 2) broaden management perspectives and capabilities, and 3) develop contacts and shape management relations. Further, standardized training allows for uniform skill classification, making it easier to transfer staff within each region. The subsidiaries are dependent on headquarters for some training criteria for those managers likely to interact with other parts of the firm and generally leave the development of these criteria up to the headquarters. The training of the international cadre of managers tends to be very centralized, with an emphasis on capability and adaptability to headquarters. The advantages of the global approach to training are that it exploits economies of scope and scale. The disadvantage is that headquarters is not necessarily the most expert MNE unit in all functional and product areas.

Financial and securities industries have long provided overseas assignment preparation to give workers a knowledge of local markets. In spite of this, many failures of American MNEs in Japan, for example, have been attributed to the lack of overseas experience or training for expatriate management, insufficient career development programs for local hires, and inability to recruit top Japanese employees. Local responsiveness to Japanese personnel practices is critical for American firms to operate smoothly and successfully in the Japanese market.

A transnational approach to training. In the transnational approach to training, training is shared and criteria exchanged throughout the MNE. Employees

are trained with the potential for transfer in mind. The subsidiaries look to centers of expertise in products and functional areas for training criteria in those areas, and these centers of expertise develop criteria for worldwide application. Compatibility with these centers of expertise is considered for future rotation and integrated learning. Further, training materials evolve as a result of shared learning. The advantages of the transnational approach lie in economies of scope and scale, its dissemination of best practices, its shared development of materials, and its orientation to major international competitors because its centers of expertise are likely to be in the most competitive markets. The disadvantage of the transnational approach is that it is difficult to organize.

Regional training programs, such as that recently established by Matsushita and Itochu, further encourage managers to create connections across national boundaries which ease cross-border transactions of resources, goods, services and information. Overseas training thus can be used to both enhance knowledge of the local market and to enhance core technologies, goals, and management philosophies across subsidiaries. Regional training and development centers can integrate training and other personnel practices to allow personnel to flow between subsidiaries more easily. Integrating training and other personnel practices builds cultural norms, shapes organizational practices, and develops managers to meet strategic and organizational objectives.

Performance evaluation in the multidomestic, global and transnational firm.

A multidomestic approach to performance evaluation. The multidomestic approach to performance evaluation would suggest that each subsidiary evaluates its employees locally without input from the headquarters. The subsidiary is not dependent on the headquarters for performance evaluation criteria

and does not develop criteria for worldwide application, making performance evaluation an activity decentralized to the subsidiaries. In addition, compatibility with headquarters performance evaluation programs is not necessary. The advantages of the multidomestic approach to performance evaluation are that it is tailored to specific jobs, and takes into account various constraints imposed by the local environment. It is most suitable for industries rewarding local responsiveness and efficiency. The disadvantage to the multidomestic approach to performance evaluation is that it makes it difficult to align subsidiaries to any common goal. In addition, it impedes the integration in the subsidiary of local mid-level managers and top subsidiary managers assigned by headquarters.

A global approach to performance evaluation. Evaluation also can be integrated and made uniform across subsidiaries. Because MNEs have a huge variety of employees from many different backgrounds, there must be a system in place for the proper evaluation of these employees along with the proper motivation systems for these employees. It is not only an ideal, but a necessity, that the employee appraisal system be unprejudiced and equal to employees of all nationalities. In the global approach to performance evaluation, headquarters provide some input into subsidiaries' performance evaluations in the form of providing criteria and performance evaluation for an international cadre of managers that rotates among the headquarters and various subsidiaries. The subsidiaries are dependent on headquarters for some performance evaluation criteria for the managers likely to interact with other parts of the firm and generally leave the development of these criteria up to the headquarters. The performance evaluation of the international cadre of managers tends to be very centralized with an emphasis on capability and adaptability to headquarters. One advantage of the global approach to performance evaluation is that it is tailored to the performance of the global product

line. A second advantage is that global performance evaluations tend to focus work incentives toward integration across subsidiaries. Finally, it facilitates the evaluation, comparison, and transfer of an international cadre of managers. The disadvantage is that it is not as locally responsive as the multidomestic approach and does not necessarily take into account local constraints.

A transnational approach to performance evaluation. In the transnational approach to performance evaluation, evaluation material is shared and criteria are exchanged. Employees are evaluated with the potential for transfer in mind. The subsidiaries look to centers of expertise in products and functional areas for performance evaluation criteria in those areas, and these centers of expertise develop criteria for worldwide application. Compatibility with these centers of expertise is considered for future rotation and integrated learning. Further, evaluation criteria evolve as a result of shared learning. The advantage of the transnational approach is that it is tailored to performance of the global product line and top functional standards worldwide. As such, it focuses on setting high standards and achieving excellence across subsidiaries and also facilitates shared learning and the transfer and integration of skills. The disadvantage of the transnational approach is that it is not necessarily responsive to local constraints.

Table 5.1
Personnel practices in the context of multi-domestic, global and transnational strategies

HRM Practices	IM STRATEGY			
	MULTI-DOMESTIC STRATEGY "Local"	GLOBAL STRATEGY "Home Base"	TRANSNATIONAL STRATEGY "Shared/Interactive"	
Recruiting Managers Locus of Decision-making	Each subsidiary hires all its own mid-level managers (excludes top sub mngers. assigned by HQ)	HQ provide some criteria for hiring in subsidiaries Mix of global & local practices	Hiring and hiring criteria is shared Mix of global & local practices	
•Sub dependent for criteria •Sub develop criteria for worldwide •Centralized/Decentralized •Compatibility/Adaptability to HQ necessary	No No Decentralized No	Yes No Centralized Yes	Yes Yes Centralized in centers of functional & product expertise Not necessarily	
Advantages & Disadvantages of each IM Strategy for Recruiting	+ •Easier to hire locally •Suitable for industries rewarding local responsiveness	- •Can impede communication across MNE	+ •Allows for HQ control •Encourages hiring int'lly oriented mgrs	- •May be difficult to reconcile global & local practices
			+ •Encourages developing expertise across subs - •May be difficult to reconcile global & local practices	

Table 5.2
Personnel practices in the context of multi-domestic, global and transnational strategies

HRM Practices	IM STRATEGY			
	MULTI-DOMESTIC STRATEGY "Local"	GLOBAL STRATEGY "Home Base"	TRANSNATIONAL STRATEGY "Shared/Interactive"	
Functional/Product Training Practice Locus of Decision-making	Each subsidiary trains its employees locally	International cadre of line mgrs. + Sub HRM mgrs. trained by HQ Mgrs Mix of global & local practices	Centers of Expertise train other subsidiaries in that function or product Mix of global & local practices	
•Sub dependent for criteria	No	Yes	Yes	
•Sub develop criteria for worldwide	No	No	Yes	
•Centralized/Decentralized	Decentralized	Centralized	Centralized in centers of functional & product expertise	
•Compatibility/Adaptability to HQ necessary	No	Yes	Not necessarily	
Advantages & Disadvantages of each IM Strategy for Training	<ul style="list-style-type: none"> •Tailored to people's jobs •Suitable for industries rewarding local responsiveness efficiency 	<ul style="list-style-type: none"> •Impede flow of products & functional expertise across subs 	<ul style="list-style-type: none"> •some econ of scale, scope •HQ not necessarily most expert in all areas •May be difficult to reconcile global & local practices 	<ul style="list-style-type: none"> •economies of scope: disseminate best practices, shared materials •oriented to major intl competitors bec. cntrs. of expertise likely to be in most compet. mkt's •difficult to organize •May be difficult to reconcile global & local practices

Table 5.3
 Personnel practices in the context of multi-domestic, global and transnational strategies

HRM Practices	IM STRATEGY			
	MULTI-DOMESTIC STRATEGY "Local"	GLOBAL STRATEGY "Home Base"	TRANSNATIONAL STRATEGY "Shared/Interactive"	
Subsidiary Upper Management Performance Evaluations Locus of Decision-Making	Evaluations differ for each subsidiary	Evaluation of Int'l Cadre of Mngrs. and Top Sub Mngrs. includes global criteria Mix of global & local practices	Criteria for Top Sub Functional and Product Mngrs determined by Product & Function Leaders Mix of global & local practices	
•Sub dependent for criteria	No	Yes	Yes	
•Sub develop criteria for worldwide	No	No	Yes	
•Centralized/Decentralized	Decentralized	Centralized	Centralized in centers of functional & product expertise	
•Compatibility/Adaptability to HQ necessary	No	Yes	Not necessarily	
Advantages & Disadvantages of each IM Strategy for Perform. Evaluation	<ul style="list-style-type: none"> • Tailored to local jobs in that local environment • Sustainable for industries rewarding local responsiveness, efficiency 	<ul style="list-style-type: none"> • Difficult to align subs to a common goal • Difficult to assess sub manager's contribution to MNE other than in sales or profit terms 	<ul style="list-style-type: none"> • Tailored to Performance of Global Product Line • May focus work incentives on integration • Facilitates evaluation, comparison, transfer of int'l cadre 	<ul style="list-style-type: none"> • May be difficult to reconcile global & local practices • Tailored to Performance of Global Product Line • Focuses on excellence, sets high standards • Facilitates shared learning & transfer and integration of skills

Personnel practices in large Japanese firms and American firms in Japan

To place the personnel practices of Japanese firms and American firms in Japan in context, I begin by discussing employment in Japan, firm-internal labor markets, and relationships between the Japanese firm and its employees. Next I focus on recruiting first in Japanese firms and then in American firms in Japan. To provide historical context and comparison, I then briefly outline classical models of the Japanese firm.

Labor mobility and firm internal labor markets in Japan

Japanese statistics on employment fall into three categories: self-employed, family members, and employees.⁸⁴ As personnel practices are more likely to be institutionalized in larger firms, I focus here on larger firms and "employees" rather than on smaller firms or the self-employed. In 1988, OECD (1989:14-15) estimated the number of Japanese in the employee category to be over 45 million.⁸⁵ The term employee here covers two types of wage earners: regular (permanent, full time) and non-regular (temporary and daily).⁸⁶

Over 40 million Japanese are regular employees hired with the understanding that, in principle, employment starts immediately after graduation from high school or college and continues until the mandatory age limit (*teinen*), which is usually

⁸⁴*Nihon Tokei Sho*, Japanese Statistics Bureau 1990: 72-3

⁸⁵35% of these were female.

⁸⁶These two types of employment, regular and temporary, are now distinctly set apart, as is evident in the case of working women whose pattern of employment is substantially different from that of men (see Ballon 1992: 19). Upon graduation, women may be hired as regular employees, but in general they are expected to quit at the time of marriage or childbirth, usually about the age of 25; later around the age of 40, when they return to the labor market, they are hired as non-regular employees. Currently, one-third of the female labor force is employed part-time; of the part-times, one woman out of three is fact works full time, continuously renewing her contract over a period of several years without the benefits given to regular employees. As yet, effective administration of the Equal Employment Law of 1985 is only just beginning.

60.⁸⁷ Foreign capital affiliated companies employ over 300,000 Japanese in their operations.

Table 5.4
Employed persons, 1985-9 (in thousands)

Employment	1985		1986		1989	
	All	Female	All	Female	All	Female
All industries	58,070	23,040	60,110	24,080	61,280	24,740
Self-employed	9,160	2,880	9,100	2,840	8,960	2,810
Family Workers	5,590	4,610	5,430	4,480	5,310	4,370
Employees	43,130	1,548	45,380	16,700	46,790	17,490
Regular	38,660	12,470	40,540	13,430	41,760	14,070
Temporary	3,210	2,370	3,600	2,620	3,760	2,760
Daily	1,260	650	1,240	650	1,270	660

Source: Statistics Bureau 1990: 72-3

As a result of life-time employment among white collar full-time workers in large Japanese firms, labor mobility among these employees is extremely low.⁸⁸ Labor mobility occurs primarily in companies with less than 300 employees--the two-thirds of the companies in Japan which support the other one-third of larger Japanese firms (Huddleston 1990: 29).⁸⁹ In 1984, about 32% of all male workers aged 50 to 54 were still working for the same company that they had joined upon graduation. International comparison shows that the percentage of employees who remained at their current job for 20 years or more was 21.9% in Japan, 13.2% in

⁸⁷It is also understood that compensation and promotion are based on a combination of performance and length of service (Ballon 1992: 18).

⁸⁸Koike notes however, that "young workers in small plants move from one firm to another so frequently that the annual separation rates are more than 30%. Although these rates drop to about 15% when these workers are in their thirties and forties, they are still about 10 percentage points higher than the rate of Japanese workers in large enterprises" (Koike1983:97).

⁸⁹Huddleston notes the mobility rate in 1990 as around 13%, down from 20% in 1970 (1990: 29).

France, 12.1% in the United Kingdom, 11.6% in West Germany, and 9.9% in the U.S. (OECD: 1986: 68). The average unemployment rate for the advanced economies was 8.9% between 1983 and 1987, but only 2.7% in Japan. In 1989, the rate was 2.3%, which represented about 1.5 million unemployed, the lowest annual average since 1981 (JIL 1990: 3). One result of this low labor mobility is low unemployment (Ballon 1992: 21).

Table 5.5
Manufacturing: Ratio of retained employees (male)
by size of enterprise 1977-87 (per cent)

Age Bracket	1000 or More Regular Employees		100 - 999 Regular Employees		10 - 99 Regular Employees	
	1977- 82	1982-7	1977- 82	1982-7	1977- 82	1982-7
25-9	79.1	91.3	68.2	70.6	58.0	50.5
30-4	83.6	90.1	81.1	86.9	74.2	69.2
35-9	90.0	91.2	88.4	93.7	82.0	78.6
40-4	92.5	88.6	92.6	95.3	86.9	81.9
45-9	90.5	88.1	91.2	89.4	86.1	84.1
50-4	89.9	77.6	83.9	82.7	80.6	77.4

Source: MOL 1988c: 189

Table 5.6
Employment adjustment measures in large companies,
1974-5 and 1985-6 (per cent of companies)

Employment Adjustment Measures	Companies listed on the Tokyo Stock Exchange	Large Manufacturing Companies	
		1985	1986
Transfer of personnel	-	43.4	49.3
Cut of overtime work	75.3	26.6	33.9
Dismissal of part-time employees	59.6	22.6	27.6
Reduction of mangmnt compensation	56.1	22.4	21.2
Stop of managerial promotion	24.3	11.6	12.2
Call for early separation	14.2	11.6	10.5
Promotion of voluntary separation	-	6.2	7.6
Temporary layoff	40.6	5.4	5.4
Dismissal	5.2	2.6	2.2
No pay increase for general employees	1.5	1.5	1.5

Source: MITI 1976 and MITI 1987b: 83

Lincoln and Kalleberg (1990: 15) note that, "Careful recruitment and lifetime employment function to achieve an optimum fit between the values and expectations of employees and the norms and goals of the company." Highly differentiated job and status hierarchies, which Blauner and Dore see channeling relations and communications in a vertical direction and hence favorable to the firm, imply greater opportunities for career mobility within the boundaries of a single corporation. When the primary route to improved social and economic standing is individual advancement within a company, the result, in Hirschman's (1970) term, is loyalty, as against the voice of collective action or exit to opportunities with a different employer. Another facet of firm internal labor market organization with strong implications for control and commitment is a stress on firm-specific skills and

knowledge which have value to a particular employer but are not readily transferable to jobs with other companies. Organizational designs that stress job rotation and team production, coupled with strong corporate cultures and intensive on-the-job training, represent a formula for the creation of enterprise-specific skills at the expense of easily portable occupation-specific skills.

Classic models of the Japanese firm: The three pillars of Japanese employment.

Clark (1979: 142-3) proposes that the Japanese labor market is best understood in terms of employees and firms, rather than jobs and skills. In western labor markets, employers offer jobs with particular specifications in the hope of attracting people with particular skills. In Japan, on the whole, firms seek employees: men and women of a variety of types, whose actual jobs will probably only be decided upon when they have been engaged by the firm, and whose jobs may, moreover be changed several times in the course of a company career.⁹⁰ Similarly, in the view of Philip Morris's personnel head, western organizations have fixed positions which they then fill with people. In contrast, Japanese organizations consider the people first, and then create and define the jobs around them so that the firm is flexible and not fixed.⁹¹

Traditionally, the three pillars of the Japanese employment system were lifetime employment, seniority promotion and enterprise unions. Lifetime employment implies that once a worker is employed by company (usually a large company), the company will tacitly guarantee his position there until retirement age in return for his

⁹⁰He further argues that, in the West, pay is associated with jobs; jobs requiring little skill being paid less than those requiring greater skill. In Japan, pay is associated with size of firm. Larger firms pay more than smaller ones, partly because their higher productivity enables them to do so, and partly because in larger firms there are frequently labor unions campaigning for higher pay (Clark 1979: 143).

⁹¹Interview with Mr. Eiichi TANUMA, Director, Personnel and Administration, Philip Morris KK., Nov. 25, 1992.

loyalty.⁹² The discussion of lifetime employment in Japan was originally put forward by James C. Abeggan:

At whatever level of organization in the Japanese factory the worker commits himself on entrance to the company for the remainder of his working career. The company will not discharge him even temporarily except in the most extreme circumstances. He will not quit the company for industrial employment elsewhere (Abeggan 1958: 11).⁹³

Lifetime employment was instituted in a small number of firms after the turn of the twentieth century when country-wide labor disputes between 1900-1910 forced companies to guarantee positions in order to retain skilled, committed workers from among elementary and middle school students and veterans as Japanese companies entered into industries requiring that they maintain higher skills in-house.⁹⁴ Until the late 1950s, companies dealt with changing business circumstances by adjusting the number of temporary employees (*Rinji-Ko*) that they retained. Longterm skilled workers (*Kikan-Ko*) comprised approximately 30% of all workers prior to World War II.⁹⁵ After WWII labor shortages and a social movement toward job security brought about a rapid expansion of lifetime employment among Japanese firms. The Japanese economy experienced quite rapid growth in the late 1950s and companies suffered chronic shortages of labor due to production expansion. In order for companies to import and ensure advanced technology transfer from North America and Europe, it was strategically efficient to incur training costs, given that employees stayed long enough to produce a return for their training investment. Large companies induced temporary workers to become long-term lifetime employees

⁹²This is based not on an explicit contract but on tacit understanding between an employee and an employer.

⁹³Clark similarly defines the Japanese company as a body of people who have willingly come together to share common aims, activities, and values, such that when a man joins or leaves a company his action implies a moral choice of agreeing or disagreeing with those values, and indirectly expresses an opinion about what he is or wants to become. Hence, joining a company implies submitting oneself to its authority, and recruiting someone usually includes assessing his willingness to submit (Clark 1979: 140).

⁹⁴Workers changed their jobs freely until at least the middle of the Meiji period.

⁹⁵"Nihon Keizai Jiten," Nihon Keizai Shimbunsha: 1981: 815.

(*Kikan-ko*) in order to expand and upgrade their work force. At the same time, Japanese courts prohibited companies from dismissing employees without lawful reason and required employers to take the following steps even to reduce surplus workers in economic recession: (1) establish the necessity of cutting their work force, (2) make sufficient efforts to avoid dismissal such as personnel reassignment, (3) establish objective criteria for the selection of individuals and (4) negotiate with a union.⁹⁶ Later in the 1950s and 1960s, when companies carried out dismissals, unions picked up where the courts left off and fought the companies through strikes. The companies suffered not only from the economic damage caused by the strikes but also from damage to their images in their inability to avert the strikes.

Since the early 1960s, the lifetime employment system has been reinforced by several job security laws. In 1966, the Job Security Law (*Koyo-taisaku ho*) obliged employers to report dismissal of more than 30 employees in a month. In 1975, the Employee Insurance Law (*Koyo-hoken ho*) introduced subsidies for companies that made agreements with their unions regarding employee count, compensation, training, layoff policies, and lending of employees to other firms. In 1977, the Temporary Law for Specific Depressed Industries (*Tokutei Fukyuu Gyousyu Risyokufsya Rinjisochi ho*) required an employer in an identifiably depressed industry to set up a support plan for laid-off employees and register it with the Public Employment Security Office when the employer reduced its business. The PESO had the authority to change or deny the plan if it was not suitable due to the intention of the law.

Seniority System. In the seniority wage system (*Nenko joretsu seido*), wages, wage increases, promotion, evaluation, and severance pay are strongly dependent on age or service years in the firm. Such seniority ladders trace back to the Edo period

⁹⁶ Imai and R. Komiya, *Nippon no Kigyo* (Tokyo Daigaku Syuppankai, 1989), 280-281 .

(1603-1867), in which employers placed great importance on service years and an emphasis on paternalistic apprentice-style training. With the industrialization of the Japanese economy in the Meiji era, Japanese businesses experienced a chronic labor surplus from agricultural districts. They grew quickly and absorbed the surplus rather rapidly. In order to use this great number of employees effectively, Japanese companies adopted the wage system that would maximize the incentive for the organization as a whole⁹⁷ rather than a system which would maximize the incentive of a limited number of outstanding leaders. This system proved advantageous as Japanese companies strove to catch up with European technologies and techniques, capitalizing on numerous workers who wished to master the new methods rather than merely a limited number of creative leaders. Under static business conditions with stable firm size, this system promotes harmony and shared knowledge between senior and junior employees who do not compete with each other but only among their own age groups.

Company Unions. Japanese enterprise unions are organized internally in each company, independent of employee occupational category or skills. Enterprise unions began with the rapid industrialization of the 1860s and the migration of workers from agricultural areas to urban areas, which did not afford them enough time to organize occupational unions across companies. After WWII, both employers and employees were more concerned with income expansion than with income distribution across classes. Raising profits of the companies as a whole improved the quality of the employees' lives as well. The company was "the community of fate" for both management and labor. Employees during the post-war reconstruction were too busy to set up organizations across companies and did not perceive any income disparity with their employers worth contending. The many

⁹⁷R. Dore investigated the early Japanese wage system of the Yokosuka government shipyard. R. Dore, *British Factory Japanese Factory* (University of California Press, 1973), 379-384.

strikes in large companies such as Nissan, Toyota, and Toshiba in the late 1940s and 1950s hurt the company unions as well as companies and resulted in a growing perception that neither party could progress without cooperation between labor and management.

Chapter 6:
Recruiting practices in large Japanese firms and American firms in Japan.

This chapter explores recruiting and selection in Japanese firms and in American firms in Japan as an example of personnel practices. First, I focus in on recruiting and selection and frame them in terms of different labor market entry points, one for new college graduates and one for mid-career hires. Second, I briefly outline classic models of employment in Japan and then review the more recent literature on recruiting in large Japanese firms. For purposes of comparing institutionalized management practices in Japanese firms and American subsidiaries in Japan, I concentrate on management-track employees, as they make up the majority of employees in these foreign subsidiaries. Finally, I review current research on recruiting in American companies in Japan.

Recruiting and selection in large Japanese firms.

Japanese labor market entry points: upon graduation and mid-career.

In the classic model of the Japanese firm, Clark (1979:146) differentiates between a primary and a secondary labor market. The primary labor market is created by graduates from high school and university looking for employers. The secondary labor market is created by men moving from one employer to another. In the primary labor market for men and women, the advantages lie on the one hand with job-seekers with better educational qualifications, and on the other hand with larger firms. A good education is seen as a passport to a big company, with its prospects of high pay and greater security of job tenure. Abegglen notes that "the best students seek out the company that appears to have the most promising long-term prospects" (1985: 199), building on the concept of lifetime employment as a

commitment for a career rather than merely a single or particular job. Large firms, because they offer better conditions than small ones, are more easily able to indulge the preference for hiring people straight from school and college.

Mid-career recruiting in Japanese firms .

Clark separates mid-career recruits into two groups. The first group is composed of men who retire at the age set by the company, usually 55 or 60.⁹⁸ The second kind leaves his job before official retirement age. Men of all types leave companies of all sizes, including even the large companies at which 'lifetime employment' is said to exist in reality or as an ideal. Nevertheless, men in large companies do not leave as frequently as men in small ones, and the older and the more highly educated a man is, the less likely he is to quit.⁹⁹

For men who leave their employers before retirement, the evidence is that the vast majority join other employers rather than set up their own businesses. While retiring employees tend to move from larger employers to smaller ones, employees who leave their employers before retirement may not necessarily move to smaller firms.¹⁰⁰

The lower paid men--younger less educated, and in smaller companies--are leaving their jobs and moving to jobs where the pay is better. The better paid men--older, more highly educated, and in larger companies--have less incentive to move, and so stay where they are. An older graduate manager in a large company probably receives higher pay and may have accumulated rights to a pension, rights which are

⁹⁸They will of course be too young to qualify for a state pension and will not be sufficiently well-off to stop working. Some of them will be re-employed as special category workers in the firms from which they have retired, at reduced pay. Others will be placed with subsidiaries and affiliates of their original firms, and at these their conditions of employment will reflect the inferior status of their new employers. Yet others will make a clean break and will find jobs elsewhere. These men, too, are likely to experience a fall in income (Clark 1979: 150).

⁹⁹*Rodosho: Rodokijunkyoku: Teinen Totasusha Chosa no Kekka* (1979) Ministry of Labor Standards Bureau: Results of Survey of Workers of Retirement Age. See also Clark 1979: 150, Table 7.

¹⁰⁰As *Rodo Jiho* (30: 2: 1979, Table C9 p. C152) and *Rodo Jiho* (30 (1979): 7) show, the younger a man is, the more likely he is to do better after leaving his first employer.

most unlikely to be transferable to any new employer. On the labor market, older workers are not in short supply and Japanese employers do not necessarily pay older mid-career recruits very well.¹⁰¹ An older worker will think hard before he decides to change jobs, and will only move for a very good reason.

Clark describes mid-career recruiting in the company he studied,

Most Japanese companies do "not attempt to recruit skilled workers from [their] competitors...The real reason for [their] forbearance was moral: recruiting skilled workers could be thought as poaching from other companies, and that would be unfair. Even when a man with experience in another...company came into [a company's] hands, very little account was taken of his work outside the company.... The disadvantages [of being a mid-career hire] were compounded by the fact that mid-career entrants were given no systematic training, and often, because supervisors were overworked, no training at all (1979: 165).

In sum, mid-career recruiting makes up only a small part of recruiting in large Japanese firms, where most of the employees are recruited upon graduation from school.

More recently, according to the Economic Planning Agency's 1987 Questionnaire Survey on Corporate Behavior, only 30% of enterprises have filled their personnel needs through mid-career hiring, while 90% of Japanese business enterprises have in the past used personnel from the main line of business by transfer

¹⁰¹The screening and agency theories provide a rationale to account for a positive relation between employee earnings and tenure of employment with the same company (controlling for employee skills). The employee's wages are lower than his marginal product of labor at the point of hiring, but rise above his marginal productivity by the time he retires. According to screening theory, only long term employees will be willing to take low wages at the time of hiring for higher wages later. According to agency theory, as the employer gets to know the employee over time, he or she is better able to assess and reward the employee's marginal productivity accurately. An additional theory which might account for the positive relation between employees' earnings and tenure of employment is the specific capital theory. Specific skills are non-transferable skills which are only useful to a particular company, such as learning to operate a unique machine found only in one company somewhere. General skills are transferable and can be used in many different company contexts, such as reading, writing, math, typing, etc. The firm must offer additional incentives to induce employees to attain company-specific skills which cannot be transferred to another company or otherwise compensated for in the market place. American and Japanese education and training systems fit in with specific and general skills attainment. Often, Americans gain general professional training through professional schools such as business schools upon graduation from college. Japanese gain more company-specific professional training through on-the-job training in the company.

and long-term dispatch to secure the necessary personnel for diversification and moving into new business areas (EPA 1988: 178). There are several possible reasons for these low rates of mid-career recruiting. First, to fully inculcate employees into the company's culture (*shafuu*), it is seen as better to recruit young people straight out of school before they gain experience elsewhere in order to avoid prejudicing their receptiveness to what they will learn in the company and to maximize the identification employees may have with a company. Second, Ballon (1992:27) and Cordell (1992) note that Japanese companies are reluctant to hire people with previous work experience because it is still widely presumed that such recruits are temperamentally unstable since they were unable to adjust properly to their previous employer's corporate network of human relations. Third, new college graduates are significantly cheaper to employ than mid-career hires. Fourth, because Japanese firms generally invest a great deal of time and expense in training their employees, they want employees to stay long term and they are unwillingly to let employees leave the firm before seeing a return on this training investment. Subsequently, they try to keep them in-house through interesting task assignments, job rotation, and other perks such as company housing. In addition, once the company has hired an employee, it is very difficult to dismiss him without lowering the morale of the rest of the company's employees. As a result of training these employees in a variety of functions related specifically to one firm, employees become specialists about that firm.¹⁰² These firm specific skills are not generally perceived to be applicable at other firms, so mid-career openings are generally limited to those who have specific technical skills that are urgently required.

¹⁰²See Gary Becker's discussion of firm-specific capital .

University recruiting in Japanese firms. Of the one million new graduates hired in 1988, half were female; 45,000 were junior high school graduates, over 525,000 were senior high school graduates, and 420,000 were junior college or university graduates (MOL 1989h: 27). Yagi (1992) notes that the acceptance rate for applicants to large Japanese companies such as NKK is 100 out of 1700.

University recruiting can be divided into two categories: 1) general business staff, and 2) research and development staff. Many Japanese firms hire general business staff (*Jimukei*) from undergraduate social sciences or cultural sciences majors.¹⁰³ Traditionally, recruitment of engineers and technological researchers (*Gijutsukei*) has been systematically different from general business staff in that professors can affect the career decisions made by students in their seminars by writing recommendations for them, though this system seems to be softening now.

¹⁰³Companies pay less attention to the academic discipline in which the candidate graduated, except in the area of physical sciences, and place more emphasis on university reputation, which they use as an indicator of the long-term potential of the newly hired employee (Ballon 1992: 25).

Table 6.1
Newly hired employees, 1986-8 (in thousands)

Newly Hired Employees	1986		1987		1988	
	Number	(Female)	Number	(Female)	Number	Female
Total	3,914	(2,057)	3,998	(2,121)	4,549	(2,380)
Occupationally Inexperienced	1,872	(1,158)	1,884	(1,162)	2,066	(1,287)
New graduates	984	(503)	967	(526)	988	(520)
Others	887	(655)	917	(636)	1,078	(766)
Experienced Empes.	2,042	(898)	2,114	(959)	2,482	(1,093)
by Size of Firm						
1,000+	296	(150)	249	(133)	247	(121)
300-999	207	(107)	183	(101)	201	(112)
100-299	196	(97)	203	(101)	211	(107)
30-99	131	(67)	143	(63)	181	(95)
5-29	127	(6)	153	(103)	124	(72)

Source: MOL 1989h: 26-8 and previous years

While graduates were hired in greater numbers during the economic boom of the 1960s, this trend was drastically reversed with the oil crisis of 1973 and the rapid appreciation of the yen in 1985. Average life expectancy is estimated to increase to 79 years for men and 86 years for women in the year 2010 (JIL 1989b: 67). Since 1965, the average age of the labor force has increased from 32 to 38, and the years of service from 6.6 to 10.8 (MOL 1990b: 2). In the large manufacturing companies, average years of service increased between 1976 and 1986 from 12.0 to 17.4, an increase of 5.4 years (MITI 1987b: 67). A rapidly aging society may mean more top managers staying longer at the top and the loss of the prospect for managerial promotion, traditionally a great incentive for productivity (Amaya 1983: 25).

Process of recruiting new college graduates in Japanese firms. Yagi (1992) describes NKK recruitment in detail. To recruit new college graduates, NKK's personnel department sets up about ten recruiting teams organized by alma

mater which target students of major universities, and allocates target numbers of undergraduates to be interviewed by each team. Each university team works like a project team and contains a team leader (usually a senior personnel manager), a responsible personnel manager (a young personnel manager), a few personnel staff members, and ten to twenty general members who graduated from the university. The team leader directs the agenda of his team and conducts semi-final interviews with students, while each of the other personnel managers controls the daily activities and decisions. As such, the personnel manager is the locomotive of this project.

Recruiting schedules differ from year to year because, in spite of the existence of a gentlemen's agreement¹⁰⁴ among large businesses, some companies violate the agreement and secretly start recruiting activity before the agreed deadline.

January: Set up a plan for recruitment (both for engineers/technical researchers and general business staff) with the section in charge of evaluation and promotion which has the authority to approve the required number of employees for each division of the firm. Personnel managers ask young recruiters to contact their friends at their alma mater through clubs or thesis seminars. When a personnel manager gets a report from his friends that some companies have violated the gentlemen's agreement, he gathers his team members and starts the recruiting process.

March: The recruiting section of the Personnel Department arranges university teams and selects recruiters.

End of March: Hold a large informative meeting for recruiters.
(From here activities are conducted by each team.)

April to June: Gather information on students as possible recruits.

End of June: Call students directly to make appointments to talk about NKK.

July: Hold four to five sessions to interview students.

¹⁰⁴Members of Japan's four employer associations and the Ministry of Labor originally signed an agreement in 1972 that set a recruiting schedule to be followed by all firms. The agreement worked, though not well, until 1981. When the Ministry of Labor abandoned the agreement in 1986, it became a gentlemen's agreement. Since then, there has been no end to the violations, especially on the part of banks and securities firms. According to the agreement, companies are allowed to hold meetings to promote the companies to students after August 20, to accept students' visits after September 5, and to offer positions after October 15, but they often make offers as early as the previous spring.

End of July: Choose candidates for interview by the general manager of Personnel.

Early August: The candidates have a final interview with the general manager of Personnel. Some of them receive informal verbal offers to enter the company (*NaiNaitei*).

August 20: Gather all candidates with company approval and spend a few days together.

September and Early October: Organize get-togethers.

October 15: All the candidates from all teams get together at NKK headquarters .

October to March: The second section takes care of the candidates by sending letters and magazines to new entrants, training materials, and surveys about their occupational desires.

April 1: Hold the Entrance Ceremony.

Firms purchase lists of graduating students' names, addresses, schools, and majors from companies such as Mainichi Shimbun, Nihon Keizai Shimbun, Diamond Company, and Recruit Company.¹⁰⁵ The personnel department uses these lists to prepares lists of major universities for the teams before the March meeting. Younger team members monitor competitors' approaches to schools, and once one firm in an industry begins calling students, other firms follow suit. Firms in mature industries must take the initiative to contact students, as many students are more interested in financial institutes, trading firms, and government ministries.

Alumni faction's involvement in recruiting for Japanese firms. Some Japanese companies have very strong old boys networks, or *Gakubatsu*, alumni factions, among graduates from specific universities. These alumni networks are very evident in contacting students during recruiting, yet alumni preference does not extend to selection, evaluation, promotion, or examination of personnel transfer in

¹⁰⁵A quarter of students often have moved between the time the database is compiled and the time recruiting begins.

many companies because such partiality in perceptions of inequity and subsequent loss of legitimacy and possible ostracism.

University based recruiting organizations allows teams to match their approach to the characters of the various universities from which they recruit. Each university has its school traditions, and each recruiter has a different style of recruiting. According to Yagi (1992), Tokyo University graduates tend to be self confident, Kyoto graduates want to be independent, Waseda graduates are independent, Keio graduates are gentlemen, and so on. Recruiters can draw on alumni connections by visiting students' homes and talking with them and their parents about the company.

Even at companies without strong alumni factions, employees who have graduated from the same university often gather a few times a year at, for example, a party after the entrance ceremony in April to celebrate newcomers from a particular university. In addition to encouraging their members, these celebrations are also useful for making company contacts and exchanging information. In this way, alumni factions put their members at a slight advantage.

Winnowing and decision-making in selection in Japanese firms. Yagi (1992) notes that NKK usually interviews 200 of the 600 students they contact. They often take a 3-day weekend to interview students and briefly explain the company. Each recruiter interviews 6 or 7 students a day, taking 45 minutes to one hour for each student. The most important thing for the first meeting is to explain the company to students so as to spark interest but not to select potential employees. Selecting students at this early stage unnecessarily reduces the potential applicant pool (less than 10 students on average are interested in NKK), from the potential

candidates in the remaining 190 students. The most efficient strategy is to attract as many students as possible and then select.¹⁰⁶

NKK selects 200 students annually in five steps: (1) interest screening, (2) recruiters' selection, (3) personnel manager's selection, (4) team leader's selection and (5) decision by the general manager of the personnel department. The 200 students are usually reduced to 100 semi-final applicants mainly due to little or no interest in manufacturing, the industry, or NKK. At the second session, the recruiters and HR staff members reduce the students by half: from 100 students to 50, with the following factors as criteria: (1) preference of a student for manufacturing, (2) localism, (3) personality, and (4) potential capability, in that order of priority. It is key that the student show a deep interest in the industry, but difficult if the student shows preference for a single location which could impede rotation to other branch offices in Japan or abroad. Sometimes a student comes for an interview simply because he wants to keep contact with the company until he receives his first offer. If an excellent candidate does not show strong interest in NKK or manufacturing after a few interviews, NKK does not follow up on them.

Both personality and potential capabilities are important criteria in selection. Successful job applicants must have at least one of the two, but usually personality is more important than capability. NKK values teamwork spirit over ability because the group nature of work in the Japanese organization is perceived to transcend the exceptional ability of any one individual. Companies that offer lifetime employment appear to place great importance on maintaining their organizational culture and so

¹⁰⁶Yagi (1992) notes that even in Japan, whose steel industry is the most competitive in the world, the industry is not popular among students. Wages are not low in comparison to other manufacturing industries but are much lower than financial intermediaries. Even for young Japanese, it is very important that they feel comfortable enough to display their ability without reserve in the office place because they probably will stay in this company until retirement age (see Yagi 1992: Exhibit 19). At NKK, students usually meet three recruiters on average before they meet with the head HR manager, though there are exceptions.

hire people who are willing to share this culture. Thus companies like NKK see a 90-10 mix, in which 90% of recruits are hired for their team spirit and good-natured personalities and 10% are hired for their leadership or special creativity potential.

At the next step, the personnel manager selects 20 students out of the 50 candidates by means of informal interviews or conversations. The recruiters' final responsibility is to select the most suitable 20, but it is also important to make those 20 students eager to enter NKK. Personnel managers take great pains to portray the firm as a good organizational culture in which to cultivate one's talent. They also stress how their business is important for a global economy. According to Yagi (1992), at this point, NKK talks to students about NKK and its business life in detail in order to let students know the "real" NKK atmosphere and let them see NKK as the best arena in which to develop their abilities.¹⁰⁷

Each team leader selects 10 students for the final round of interviews at the company's headquarters.¹⁰⁸ His decision takes into account the opinions and recommendations of other recruiting team members. Though most final decisions are made at headquarters by the general manager of the personnel division, the team leader has the authority to give final verbal approvals to a few students whom he judges to be perfect. Such delegation of quick decisions is necessary to compete with other companies in hiring qualified employees. Of the 600 student applicants, generally 70-90% are offered positions. To keep desirable students from taking offers with other companies, NKK has to keep in touch with them frequently and maintain their excitement about NKK.¹⁰⁹ On October 15, companies are officially

¹⁰⁷ While the NKK staff serves drinks or light meals during the first and second sessions, at this stage they often take some of the students to restaurants and bars to talk.

¹⁰⁸ These final interviews are usually about 30 minutes in length.

¹⁰⁹ NKK's personnel department visits Kyoto every seven or ten days to meet and have dinner with the Kyoto University students. The dinner is the first opportunity for the students to meet together, and NKK tries to create a sense of fellowship among them. On August 20, the official opening day of the recruitment process, NKK, like other large companies, takes the approved students to a tourist resort and keeps them there a few days so that they can not visit any other company. This trip is not

allowed to give offers to students, which is done by calling all newly hired students to its headquarters. At this point, recruiting teams are dissolved, and the personnel department takes care of the students from that day onward

Turnover of new recruits in Japanese firms. In spite of an attentive recruiting process and the great care that is taken to select employees with an affinity for company values, some young employees quit their jobs within several years of entering the company. The turnover rate in the early 1980s was around 1% but recently the ratio increased sharply to about 10%. Rather than resigning due to worries about a company or industry's future, the few employees who resign most often do so after receiving poor evaluations or poor assignments.

Yagi (1992) posits that this is due to two factors: 1) the younger generation's attitude toward their jobs and, and 2) the change of assignment structure for young people. First, the younger generation, especially those who were born after 1960, referred to as *Shin Jinrui*, "New Human Beings" are seen by the older generation as working not by orders but by their own sense of values.¹¹⁰ The younger generation does not put great value on given tasks if they consider the tasks to be too hard, unimportant, not meriting long hours, or not useful for their careers. Twenty years ago, employees worked without any additional encouragement beyond compensation because the longer and harder they worked, the more money they earned. During the 1960s, wages rose more than 15% annually, providing sufficient incentive to work. However, as world markets have become saturated with Japanese products, and Japanese wages have risen to comparable levels with the West, other incentives than wages must be found to motivate workers to work hard long hours. Yagi argued that

mandatory but it is regarded by the students as an allegiance test to show their loyalty to the company. After this trip NKK recruiters "loosen up on" them and just contact them by phone although, if they senses any change of mind in the students, they visit Kyoto again.

¹¹⁰ Shimizu, *Kaisha Jinji Nyumon*, A Practical Guide for Human Resource Management, (Tokyo, Japan: *Nihon Keizai Shinbunsha*, 1991), p. 310.

employees are still willing to work hard given incentives through encouragement and interesting tasks.

Second, changes in the assignment structure also contribute to early resignations. Due to market saturation and stagnated growth, firms have had to cut back hiring, thereby undercutting the pyramidal employment structure. In addition to reducing the employment of university graduates, some manufacturers cut back on employing male high school graduates.¹¹¹ As a result of the reduced numbers of employees to perform low level shop floor tasks, university graduates are often forced to perform tasks formerly performed by high school graduates. Further, due to the diminished supply of incoming subordinates to replace these college graduate employees, they are forced stay longer in these low level positions than in the past. In addition, older generation managers who grew up with the ethic of just working to work sometimes do not provide sufficient incentives to motivate their younger staff to stick with these unpleasant tasks. The older managers, who are accustomed to simply following orders, can not imagine that the young staff need additional motivation beyond compensation.

Often the personnel department is the last resort in keeping young employees from resigning. Sometimes, a line manager is reluctant to report symptoms of employee dissatisfaction to the personnel department because he is afraid that the personnel department will think that he can not manage the subordinate very well. He tries to deter the subordinate's resignation, but it is very difficult when he or another superior is one of the causes. Even worse, sometimes a manager does not notice the symptoms of his subordinate's dissatisfaction until the subordinate

¹¹¹ Both the death and birth rate (except during the baby boom 1945-7) have fallen, and the result has been a population with fewer young and far more old people. Not only has the number of young people who might enter the labor market been falling since 1965, but more and more young people are going on to higher stages of education (*Rodo Jiho*: 29: 10 (1976): 26, see also Clark 1979: 147, Table 6). As a result even the largest firms cannot fill their vacancies for high school students; the number of university graduates entering the labor market has risen rapidly (Clark 1979: 147).

declares his decision to quit his job, adding to the confusion. However, such instances of early resignation are relatively rare because Japanese companies generally take great pains to provide stimulating and diverse tasks and assignments.

Recruiting and selection in American firms in Japan.

According to MITI, the one thousand or so foreign firms which participated in their surveys employed less than 0.5% of the labor force (MITI 1990c: 141). In 1987, the Ministry of Labor recorded 144,334 regular employees and 5,629 part-time workers in their survey of 990 foreign companies, with 50% or more foreign equity including foreign branches and foreign subsidiaries. Over the span of one year these foreign firms hired 16,591 new employees, of whom 8,220 were hired in mid-career.¹¹² Illustrating this, TPF&C found that 40% of the 204 American firms in Japan surveyed reported that over 90% of their annual recruits were mid-career hires.¹¹³

Foreign firms in Japan generally follow one of two models of recruiting new employees to their ranks: 1) the Japanese model of recruiting life-time employees just out of college, and 2) the "Recruiting for Experience" model of recruiting mid-career hires as a source of market expertise, functional or product experience, and technological innovation. While recruitment in Japanese firms thus generally is limited to entrance into a career upon graduation from university, most of the American companies in Japan started out their operations there by hiring mid-career managers or going into joint ventures to acquire market expertise in order to

¹¹²On the other hand, these firms lost nearly 9,000 over the same year.

¹¹³ TPF&C, "Survey of the American Chamber of Commerce In Japan Member Companies" (1991).

establish a position in the Japanese market.¹¹⁴ Even now, regularly recruiting new graduates is not a standard activity of foreign firms (Ballon 1992: 30), such that even after ten years of operating in Japan such cases are evident in less than one out of two firms (MOL 1988b: 89). Illustrating this, Nihon DEC, for its first ten years, relied entirely on mid-career recruiting of managers and technical staff.¹¹⁵ Accordingly, more than half (56%) of the newly recruited employees have work experience (see Table 2.6, 29). The following section first examines mid-career hiring in American firms in Japan, followed by college recruiting and a brief discussion of why Japanese choose to work for foreign firms.

¹¹⁴ In contrast, Yagi (1992) notes that though there are some chances to enter Japanese companies such as NKK after some experience in other companies, they are extremely limited to those who have specific skills that NKK does not have yet requires urgently.

¹¹⁵ Nihon DEC entered the Japanese market in 1968 to market DEC's products in Japan and to provide service and engineering support to DEC's sales. After ten years of hiring solely mid-career hires, Nihon DEC began university recruiting in 1978 and brought seven new graduates into the firm, which had 180 employees at the time. In 1986, 191 new graduates joined Nihon DEC, accounting for 48% of all new employees that year, compared to 27 mid-career managers. Currently, almost half of Nihon DEC's total staff are employees who entered the firm as new graduates (IIBC 1987).

Table 6.2
Foreign firms: number of regular and part-time employees in 1987 and
employees recruited and separated in the following year (1986-7)

Industries and No. of Firms in Each	Total	Regular Employees Recruited in Past Year				Mid-Career Number (per cent)	Separated in last year	
		Total	Female	Part- time	Total			
Total	990	144,334	32,068	5,629	16,591	8,220	56.0	8,966
Construction	1	9	1	-	1	1	100.0	1
Mfcg.	326	94,132	18,980	2,559	7,883	2,849	48.4	4,101
Wholesale & Retail	431	30,005	6,539	1,154	4,126	2,543	59.0	2,505
Banking	84	12,226	4,864	582	3,248	1,939	70.1	1,500
Insurance								
Real Estate	2	15	5	3	8	8	50.0	1
Transport Comm.	31	2,108	586	171	245	128	39.9	243
Services	115	5,839	1,093	1,160	1,080	752	60.3	615
<i>Foreign Capital Ratio</i>								
100%	460	56,286	15,293	1,786	6,598	3,450	65.3	3,573
51-99%	155	20,394	3,407	1,022	2,048	1,030	48.6	1,207
50%	259	48,568	7,275	1,824	4,158	1,574	38.8	2,341
Subsidiaries of foreign firms	36	6,263	1,158	283	748	380	54.2	389
Branches	80	12,823	4,935	714	3,039	1,786	73.5	1,456

Source: MOL 1988b: 61 and 75.

Recruiting mid-career hires in foreign affiliated firms. Traditionally, recourse to mid-career recruiting has been widely viewed by large Japanese firms as a sign of inept planning or a weak personnel program, since the predominant practice in large firms is to meet all their managerial needs through internal development of new graduates. Total internal employee development is possible in one's home market during a long period of steady economic expansion. Yet the Japanese model of life-time employment may be slowly eroding as even major Japanese firms are turning to mid-career recruiting. This is especially the case with regard to specialists in fast-growing high technology and financial services industries, where, like foreign firms, Japanese firms are seeking to absorb and assimilate new information quickly. As a result, middle-management people in Japanese firms are looking with less suspicion at companies that approach them with employment offers.¹¹⁶

From the foreign firm's point of view, finding and recruiting mid-career managers or technical specialists costs significantly more per employee and takes considerably more time than does university recruiting. One firm estimates that the cost of recruiting an experienced professional is triple that of hiring a new university graduate (IIBC 1987). In addition, the mid-career professionals of interest to foreign firms following the Japanese model of life-time employment are often employees of customers or competitors, so that attempts to recruit them could threaten corporate relationships with these firms. Further, as in large Japanese companies, bringing experienced people laterally into the personnel structure of foreign firms with lifetime employment can have an impact on compensation, promotion, and career planning that can cause problems with existing staff who entered the company at the new-graduate level.

¹¹⁶For further discussion of this trend, see *Japan Times*. Special Section on Working for a Foreign Company in Japan. Wednesday, April 15, 1992, p. 23-30.

Backgrounds of mid-career recruits. Japanese managers in foreign firms appear to come from one of two general career paths previous to their current employment: 1) short-term experience in several foreign firms and perhaps one Japanese firm, or 2) long-term experience in a single large Japanese firm. Younger Japanese managers in foreign firms in Japan appear to fall into the first category of job hopping among foreign firms, while more senior managers tend to have been lifetime employees of a Japanese firm with business relations with the foreign firm. In the case of younger managers, it seems that once a Japanese has changed his employer, to move to yet another foreign employer is easy, but to move back to a Japanese employer is practically out of the question.¹¹⁷ Thus, while employees in Japanese firms are stereotypically functional generalists with regard to having experience in various aspects of marketing, sales, and manufacturing, employees of American subsidiaries in Japan are often functional experts with experience in several companies, usually foreign. This is especially true of financial service firms or foreign firms undertaking only sales in Japan. Accordingly, employees of *Japanese* companies develop firm-specific expertise and advance their careers by moving from department to department within the same company. On the other hand, Japanese employees of *American* subsidiaries in Japan often can advance their careers by developing functional or product expertise and by moving from firm to firm to gain salary increases commensurate with their market knowledge and experience.¹¹⁸

¹¹⁷The offer of a higher salary may trigger a favorable response based on the simple caveat: if the offer of a higher salary is what makes the difference, the next offer, still higher, by another firm may be equally the determining factor.

¹¹⁸Concluded from interviews with: 1) Kazuo KAMBE, Director and General Manager, Planning and General Affairs, Du Pont Toray, Dec. 9, 1992., 2) Mr. Yasutake KOBAYASHI, Senior Executive Director, Technical and Manufacturing Department, Nihon Pall, Dec. 3, 1992, and 3) Mr. Eiichi TANUMA, Director, Personnel and Administration, Philip Morris KK., Nov. 25, 1992.

Illustrating how some American firms in Japan still hire experienced sales people from other foreign companies so as not to have to train them in-house, many firms like Philip Morris often hire from other firms because their Tokyo operations are small and do not merit investing in a great deal of training.¹¹⁹ They see it as cost inefficient to train someone who will leave the company after a short time. (At the same time, many people will leave the firm after a short while because there is no training to facilitate advancement within the firm.) By hiring from other companies, they are able to hire people with previous experience. Sometimes this creates a vicious cycle. On one hand, it is not cost efficient for the company to train people who they think will leave the firm shortly (see Flath 1991). On the other hand, people often leave the firm after several years because they perceive that the only way to advance themselves in terms of their skills is to move to another company in a more challenging position. Philip Morris's 130-employee Tokyo operations hire 3-4 mid-career managers per year who are generally functional specialists specializing in areas such as management of information systems, planning, marketing, and sales. Ninety per cent of these employees have previous experience in several (2-3) firms, and they are hired as experienced mid-career managers between the *shu-nin* or *ka-cho* level -- the *shu-nin* being those with about three years of experience, and *ka-cho* level being the lowest level of management with anywhere from 5-10 years of experience in a given functional specialty.¹²⁰

More senior mid-career recruits tend to fall into the second group of managers, with life-time experience in a large Japanese firm. In the case of joint ventures, as the number of upper management positions narrows toward the top of the Japanese parent company, Japanese managers in large Japanese firms are farmed

¹¹⁹Interview with Mr. Eiichi TANUMA, Director, Personnel and Administration, Philip Morris KK., Nov. 25, 1992.

¹²⁰Ibid.

out to head or sit on the board of the joint ventures.¹²¹ Thus, the general managers heading Japanese-American joint ventures in Japan often come from life-long careers with the Japanese parent.¹²² These Japanese senior managers have often spent 20 or more years with the Japanese parent company and have only limited experience outside of that company or its affiliates. On the other hand, they usually have experience in a variety of functions, including the personnel department, a key department in Japanese companies. Subsequently, these managers often identify themselves more strongly with their Japanese parent or previous employer, even though their rank with the American firm may be higher than it was in their former Japanese employer. One reason for this may be that they perceive greater social status from their Japanese employer than they do from working for a foreign firm, particularly if the Japanese parent is a large, well-known manufacturer.¹²³ While the pay and freedom may be greater with a foreign affiliate, social prestige continues to appear to be greater with major Japanese firms.

Reasons for leaving a Japanese firm for a foreign one. In the view of Louise Cordell, a Canadian Fuji Xerox personnel department employee, managers who leave Japanese firms to go to a western firm still are not generally perceived to have been successful in their previous firms. Cordell sees mid-career hires as falling

¹²¹They commonly are dispersed to branch offices, subsidiaries, supplier firms, as well. Transferring personnel from a large company to a smaller related company (*shukko*) occurs for various reasons: employees reach a certain age limit, managerial staff becomes redundant, or there is a need for training. Transfer can be temporary (a period of two to three years) or permanent, and has been used as a means of carrying out personnel reduction and or business diversification. On average, 6% of the staff of large firms are undergoing this kind of transfer (Ballon 1992: 27).

¹²²The practice in a number of foreign firms is to recruit for a few years (*shoku-taku*) a retired Japanese executive, usually in his early sixties, who may be given a position of chairman and who, besides helping the new company develop the necessary contacts in the Japanese business community, is first and foremost trusted with the task of helping the expatriate executive in recruiting new graduates and experienced personnel (Ballon 1992: 31).

¹²³Concurring with this, three of the joint-venture executives I interviewed still considered their strongest social reference group to be their previous Japanese employer, and constantly framed their answers in comparison to their previous Japanese employer's practices.

into two groups.¹²⁴ The first group of Japanese managers are smart, but not well connected in their previous companies. At mid-career, a prospective job-changer's image of a desirable foreign employer is more likely to include the strengths associated with success in that firm's industry, such as high R&D productivity in a microelectronics firm, and size plus a famous company name in a petrochemicals firm.¹²⁵ The second group of Japanese managers are not doing very well in their group in their previous company, and therefore have sought employment elsewhere.¹²⁶ One reason these mid-career hires are not perceived to have been "successful" in their previous firms is that most Japanese perceive that they can only move to firms with less prestige because prestigious firms value internal training highly. Thus the only Japanese who leave the social prestige of their current firm are those who are not doing well there.¹²⁷

Administering the mid-career recruiting process. Several firms such as Dow Chemical Company have multiple operations in Japan, some of which are wholly owned subsidiaries and some of which are joint ventures with Japanese chemical firms. In their joint ventures, Dow takes two routes toward hiring Japanese employees. The first is to allow the Japanese joint venture partner to take care of hiring. As with most foreign firms in Japan, local Japanese personnel managers are

¹²⁴Fuji Xerox only hires about 10 experienced young managers (Ka-cho level or below) every year, compared to 736 college graduates. These mid-career hires are recruited from Japanese companies and from American MBA programs, though the trend is to avoid hiring away from other companies or giving higher salaries, and to only hire specialists at other than the entry level. (Interview with Louise Cordell, Personnel Department, Fuji Xerox, December 14, 1992)

¹²⁵Institute for International Business Communications, *Foreign Affiliates in Japan: The Search for Professional Manpower*, 1987.

¹²⁶Interview with Louise Cordell, Personnel Department, Fuji Xerox, December 14, 1992.

¹²⁷Since Japanese firms generally only hired at entry level until recently, prospective employees' chances of attaining the best company possible were greatest at initial hire. In part, Gary Becker's specific capital theory would suggest in the case of Japanese firms that firm-specific training, administrative procedures, and human relationships are not easily transferable, as they take a long time to build up in the firm and need to be developed anew upon transfer to a new firm. Thus leaving the current firm could likely result in a lower value to the new firm and subsequent lower position or rank in another firm until one could develop assets specific to the new firm, such as information and human networks perceived necessary for advancement.

often hired to take charge of their recruiting programs. They basically communicate their expectations and let the Japanese personnel manager take full responsibility in bringing in the employees. The second route to administering recruiting, used in the case of mid-career hires, is to use head hunters to screen mid-career hires from other western companies in Japan. Japanese mid-career professionals are usually hired through head hunters because corporate competition for Japanese professionals at job forums in the United States is very intense, and it is very expensive to recruit overseas. In Dow's case, the expense might be reduced in the future if all Dow firms get together and hire collectively.¹²⁸ (As with other firms, these mid-career hires are functional specialists.) IBM also works closely with a large number of recruiting firms and uses introductions by its present staff to locate mid-career candidates. Nihon DEC advertised widely in newspapers and magazines to attract mid-career recruits. At the start, DEC ran small advertisements weekly in several leading newspapers. Later, thinking that such frequent employment advertising might falsely suggest a high turnover of staff, the personnel department shifted to quarterly insertions. Ads also became much larger, on the assumption that large ads are associated in the reader's mind with large, stable companies. DEC ran magazine advertisements in computer-related publications and employment information magazines every couple of months.

Recruiting new university graduates. Once larger American manufacturers establish R&D and manufacturing in Japan, they may begin to want to recruit new college graduates to develop talent internally. TPF&C found that of the 11 firms with over 1000 employees, 58% reported that they were becoming more successful at recruiting new college graduates.¹²⁹ As one IBM personnel executive puts it, "We

¹²⁸Interview with Mr. William B. Halphen, Director, Human Resources and Administrative Services, Dow Chemical Japan Limited, Dec. 4, 1992..

¹²⁹ TPF&C, "Survey of the American Chamber of Commerce In Japan Member Companies," 1991.

prefer to recruit high-quality young people, train them, and establish our own cultural patterns just as soon as they come out of school" just as major Japanese firms do (IIBC 1987). American firms like Dow even have begun to think about sending new Japanese employees back to America for training, partly to give exposure to the parent firm, and partly to consolidate and take advantage of training in the U.S. at relatively low expatriate salaries.

As Emerson-Rosemount Japan's CEO noted, large American firms with a long term commitment to the Japanese market realize that the best Japanese employees are often snapped up for lifetime employment upon graduation from college.¹³⁰ Therefore, recruitment just after graduation is almost the only chance to hire high-level personnel. However, even for American firms in Japan, once the company hires an employee, it is very difficult to dismiss him even if his ability does not reach expectations because firing employees in Japan will mar the American subsidiary's reputation as a stable firm with job security. Concurring with this, TPF&C's study indicated that 41% of the 204 American firms they surveyed had no turnover of new graduates in the previous three years.¹³¹

The recruiting process and university relations. The personnel departments in American firms in Japan are seldom large enough to set up teams of recruiters to target students of major universities and hire large numbers of graduates as Japanese firms do.

However, despite small personnel departments, the larger American firms do try to develop relations with faculty at universities to establish word-of-mouth reputations with students looking for jobs. Traditionally, faculty in engineering and science (*Gijutsukankei*) have had great influence on the recruitment process because

¹³⁰Interview with Mr. Dwight Bohm, President, Representative Director, Dhkura-Rosemount Co., Limited. Nov. 25, 1992.

¹³¹ TPF&C, "Survey of the American Chamber of Commerce In Japan Member Companies." (1991).

the nature of laboratory work in Japan ties students much more closely to one faculty. Professors often literally assigned or allocated students to companies through the recommendations they wrote for their students. IBM Japan rates good relations with university faculty in technical disciplines as critical. However, firms like Philip Morris feel that professors are losing influence on students, particularly in the liberal arts, although professors still have some influence in areas such as engineering. Accordingly, some foreign firms hiring for sales or marketing rather than R&D do not go through faculty introductions or even require written recommendations.

When DEC began recruiting new graduates in 1978, the company was virtually unknown on Japanese campuses. During presentations to professors, its employment manager recalls, some heard the word Digital and asked if the company made watches. In its annual search for new graduates Nihon DEC approaches virtually every university in Japan--around 500 in all. The company has since developed its recognition and image on campus by several means. First, the firm's three recruiting members visit universities each year, in some cases three or four times, to talk with professors and placement counselors. Second, many of its employees return to their universities for visits with their professors or for seminars, classes, and clubs. Third, company information and recruiting bulletins are sent to all universities in Japan, and visits by the recruiters of Nihon DEC to university placement staff and faculty members have played an important role. Though requests for recommendation of science and engineering seniors are made to all universities, students without university recommendations are also able to apply through an open application system. From May through August, the company holds presentation seminars every Tuesday, which currently draw 150 to 200 students per week. To boost student recognition of the firm and its business, Nihon DEC has

held a computer summer-school session each year since university recruiting began, and students attend free of charge.¹³²

Success at the universities, Dow maintains, requires the hiring of consistent numbers of students every year. Even in difficult economic times, some firms such as Dow keep up their faculty relations by representing their numerous subsidiaries in Japan as all being part of the Dow group, so that yearly hiring appears consistent for the Dow group as a whole even though some subsidiaries don't hire in a given year.¹³³ Indeed, Philip Morris sees bad economic times as a good opportunity for recruitment. In bad economic times, Japanese firms hire fewer employees, rather than fire employees. Therefore, there is a greater supply of new college graduates than there are entry level positions in Japanese firms. This leaves a gap for western firms to hire higher quality employees than they might have access to generally. The one drawback is that often when Japanese firms are facing bad economic times, these foreign firms, particularly American firms, are facing just as bad or worse economic times.

Similarly, IBM has been noticeably more successful at recruiting since 1984, when its recruiting rate was boosted to around 1,400 students per year from 500-600 in 1980 (IBC 1987). That in itself helped raise the firm's popularity among students. Large recruiting programs year after year are needed to maintain a vital presence at the universities IBM Japan chooses for its recruiting. IBM's personnel department estimates that they must recruit a minimum of 300 engineers each year

¹³²Nihon DEC also wants graduates of five-year technical high schools. Its ability to attract them improved gradually but substantially when the company began offering on-the-job experience courses to students of these schools.

¹³³While some of the wholly owned subsidiaries will not be hiring new college graduates until 1995, Dow recruiters emphasize that other firms in the Dow group are hiring, growing, expanding, and that, when taken together, the Dow group is a group that will be in Japan for a long time, and will continue to expand.

just to "keep the faucet open."¹³⁴ In recent years IBM Japan met its recruiting requirements by concentrating its efforts at 30 major universities in metropolitan areas of Japan. But in 1986 it became necessary to range farther afield, and the company began recruiting at more than 100 universities in 1987. The strong competition for technical graduates is illustrated by the market situation in high-demand categories such as mechanical engineers, electrical engineers, and physicists. In a recent year, there were an estimated 10,000 graduates in those categories. Seven companies--IBM Japan and the top six Japanese computer and electronics firms--were seeking a total of 6000 of these graduates. It is not clear, however, whether this trend will continue, with IBM's current losses in Japan and at home.

Reaching students directly. American firms also tap graduating students directly by advertising in the numerous placement guides sent to students in the spring one year before graduation, by ads in the Japan Times newspaper, or by contacting students through currently employed alumni or lists provided by recruiting companies. These lists can be purchased easily and include student names, departments, current and home addresses, and telephone numbers. In general, Philip Morris publicizes its openings using one of the placement guides.¹³⁵ They feel that the recruitment books are a stronger influence on students than professors are. Dow, like other American firms in Japan, makes full use of ads in recruiting publications. They also have company seminars, although it is a much softer sell than in America because generally in Japan, people who show an interest in working for foreign firms such as Dow already have knowledge about them.

¹³⁴Institute for International Business Communication, *Foreign Affiliates in Japan: The Search for Professional Manpower*, 1987, p. 33-34.

¹³⁵These guides resemble telephone books in thickness, list hundreds of firms and convenient indices, and are published by newspaper publishers such as Mainichi Shimbun, Nihon Keizai Shimbun, and other publishers such as Diamond and Recruit Co. They are distributed nationwide free of charge to all seniors who want them.

Because ads are very expensive in Japan, Dow also resorts to the news media, especially looking to have articles written about new products or activities undertaken by the firm. Both AT&T and Dow have public affairs managers who have good connections with the press and promote communications that are factual, rather than human interest items. Some companies such as Eastman Kodak and Nihon DEC have gone the extra distance to contact commercial publishers to issue books profiling their parent companies.¹³⁶

Some American firms offer temporary, part-time jobs to students in their junior or senior year to give them an inside view of the company. At some universities, students have set up organizations to keep them informed about part-time job opportunities, and there are also commercial magazines in Japan (such as *From A To...*) that function as current part-time job directories and are available in many convenience and book stores. Accordingly, the image of foreign companies among students who visit a firm, attend its orientation sessions, or talk with its recruiting officers is markedly better than the image held by those who make no direct contact with foreign affiliate firms.¹³⁷

Often American firms focus on Japanese students attending American business schools or undergraduate institutions and work through recruiters such as Recruit or Disco to set up interviews for them. Philip Morris hires 3-4 employees per year for its 300-employee Tokyo office through this method. They use an agent to hire Japanese students studying in America, and often begin by hiring Japanese in

¹³⁶The writers, selected by the publishing firms, based their books on information prepared by Nihon DEC and talks with its specialists. Published respectively in 1985 and 1986, these books are available in book shops nationwide. Nihon DEC also sends these copies with the materials to the parents of university students to whom the company has made an employment offer. Though still not a household name to the Japanese public, Nihon DEC has achieved recognition among students. In annual preference surveys by Recruit Co., Ltd., Nihon DEC has reached the rank of 32nd in popularity among science and engineering students. The company points out that the other firms in the top 100 rankings are, without exception, major companies that are famous among the public in Japan (IIBC 1987).

¹³⁷Institute for International Business Communications, *Foreign Affiliates in Japan: The Search for Professional Manpower*, 1987: p. 9-10.

American MBA programs as summer interns. Tokyo office personnel then fly to New York to interview the finalists before these recruits are taken on into the Tokyo operations. Traditional Japanese firms tend to recruit postgraduate students only in technical specialties, but foreign firms often see students with newly awarded master's degrees as an untapped source of job candidates. Post graduates sometimes expect an appropriate salary differential, but normally are placed in the same trainee positions as the new graduate cohort.

Type of student attracted to working for a foreign firm in Japan. Koda and Sakakibara (1992) found that students seeking employment with foreign firms in Japan sought less group affirmation and more adventure. I spoke with several students and alumni at Hitotsubashi, Keio, and Tokyo Universities who ended up working for lucrative American financial institutions or long time Japanese resident firms such as Coca Cola. Many of the students at these universities were only interested in financial institutions, though some of them were interested in government ministries or other service industries such as trading firms. A few of them wanted to enter the academic world, though this may be a result of bias, given that the interviewer was an academic. In most cases the students seeking employment with foreign firms seemed to be more adventurous and less security oriented than their peers. Interviews with employees of Baxter Medical indicated that the Japanese who are attracted to work for western firms such as Baxter, which are generally small in size when compared to Japanese firms, have the following characteristics:

- They are people who have studied abroad or want to go abroad.
- They have a particular interest in the field in which the company operates.
- They are people who couldn't get a job in other companies.
- They are women who may feel that there is more room to move up and more opportunities to receive a higher salary.

Type of foreign firm most Attractive to Japanese. Both new graduates and mid-career recruits are concerned with the permanence of foreign companies' operations in Japan. In considering foreign affiliates, recruiters note, those seeking a change of company appear to prefer an affiliate organized as a Japanese corporation over one that is a branch of the parent firm; and a branch is more attractive than a representative office. Some university faculty I interviewed said they often checked out an American firm's stability and long term presence in the market by seeing if it was listed on the Japanese Stock Exchange, though most large firms and especially American subsidiaries are not. One of the concerns that Japanese college seniors have when considering an American firm is that the firm might not be there forever; thus job security is usually a very deep concern with those firms. The Institute for International Business Communication notes that "actual withdrawals and liquidations of wholly foreign-owned subsidiaries in Japan, as reported by MITI totaled 9 in 1984, 25 in 1985, and 7 in the first half of 1986. If foreign withdrawals from Japan-based joint ventures with Japanese partners are included, the figures are respectively 19 and 40 for 1984 and 1985, and 14 for the first half of 1986." (IIBC 1987: 8)

Perceived advantages and disadvantages of working for a foreign firm in Japan. Wages in financial services and particularly American financial services are high in comparison to Japanese firms. A 1988 Labor Ministry survey shows that, in general, foreign companies pay better salaries when compared with Japanese firms. Currently, Japanese companies pay an average of Y147,300 to a freshman newly graduated from university, compared to Y156,000 paid by a foreign firm.¹³⁸ In addition, foreign firms offer shorter working hours and longer vacations. The Japan

¹³⁸Japan Times. Special Section on Working for a Foreign Company in Japan. Wednesday, April 15, 1992, p. 23-30.

Productivity Center (1990) found that one third of the 502 foreign firms in Japan surveyed provided an average of 120 days of vacation per year and 85% operated on a five-day work week. The figures for Japanese firms were 6% and less than 50% respectively. Nearly 70% of the foreign firms surveyed claimed that their employees worked an average of no more than 2,000 hours a year while the 1989 figure for Japanese firms was 2,076 hours.¹³⁹

In addition, students perceived that other benefits of working for a foreign firm in Japan include the following factors:

- An employee's ability is more important than nationality, age or sex, when working for a foreign company in Japan.
- The stronger the personality, the better the evaluation of the employee.
- Employees do not have to spend time with coworkers after work.
- Female employees are not asked to quit after getting married.
- There is generally less overtime in western companies.
- There is generally more vacation time in western companies. Employees are encouraged to take that vacation time, and they can carry over vacation time from one year to another.
- Like Japanese firms, most western firms provide housing allowances, which can run up to seventy-five percent of rent, up to 75,000 yen per month. They also provide transportation and overtime for employees below management rank.

On the other hand, concerns on the part of students included some of the following:

- Parent companies in the U.S. are often involved in mergers and acquisitions, implying that the affiliate could have an unstable future.
- Employees regarded as incompetent tend to be quickly fired. Japanese employees perceive themselves to have unstable status because there is no lifetime employment guarantee.
- Not enough training.
- Too much individualism causes isolation.
- Many female employees fail to develop a relationship and get married because they spend too much time working.

¹³⁹Companies such as Fuji Xerox offer prepaid (Y100,000) "theme holidays" to 10 selected staff members a year, and a family nursing holiday of up to 12-24 months (unpaid) to employees with family illnesses. Companies such as IBM Japan offer a "Nice Life" plan, which provides retired employees Y600,000 for employees (with an additional Y600,000 for the spouse) to embark on new hobbies upon retirement. DEC awards travel tickets to employees to meet sales targets (Japan Times, Special Section on Working for a Foreign Company in Japan. Wednesday, April 15, 1992, p. 23-30).

Firms such as Dow often promote the following aspects of working for a foreign-affiliated company:

- Competent young Japanese people see the foreign firm as an opportunity to develop their own independence and abilities.
- Foreign firms, because of their small size and great opportunity for expansion, offer greater opportunities than Japanese firms for progression up in the company and greater speed at which to make this progress.
- Foreign firms offer an advantage to Japanese females, particularly those from liberal arts backgrounds. Japanese women in the foreign firm, particularly those from the soft sciences, are seen as more open to dealing with people from a number of other cultures, and are also seen as knowing more about other cultures.
- The new female hires in Dow have two career paths. Most of the women are looking for a career as an office lady primarily. However, there are often career opportunities for those who want them. They receive equal opportunity and equal pay. In addition, foreign firms provide women with the greatest opportunities for authority and autonomy.
- Dow, like many Japanese firms, has a global strategy to hire college grads and train them in-house.

Among smaller medical equipment firms such as Baxter, some of the attractions for independent Japanese employees are:

- There are unique opportunities in engineering in such a company; and
- There is the possibility of an international career.

The reasons that Japanese may not be attracted to working for a smaller western firm such as Baxter also include the following:

- Japanese cannot move up in the firm without a good handle on English.
- They often perceive the operations in Japan to be controlled by outsiders (non-Japanese).
- Salaries are sometimes not as high.
- They are worried about layoffs.

Summary of recruiting and selection in Japan. In sum, while large Japanese manufacturers focus on recruiting new college graduates into management track positions toward the goal of lifetime employment, large American manufacturers in Japan tend to depend on mid-career recruits to fill their

management positions. As American firms become more established in Japan, there does appear to be a trend to begin recruiting from universities. Thus, while employees in Japanese firms are stereotypically firm specialists and functional generalists with regard to having experience in various aspects of marketing, sales, and manufacturing, employees of American subsidiaries in Japan are often functional experts with experience in several companies, usually foreign. Employees of *Japanese* companies develop firm-specific expertise and advance their careers by moving from department to department within the same company. On the other hand, Japanese employees of *American* subsidiaries in Japan often can advance their careers by developing functional or product expertise and by moving from firm to firm to gain salary increases commensurate with their market knowledge and experience. As is evident from these differences in employee specialization, recruiting has important implications for training and employee development.

How American firms in Japan emphasize and combine these various recruiting practices provides one illustration of the MNE's approach to global integration and local responsiveness in terms of human resources. It is a challenge to motivate the majority of Japanese employees in an American subsidiary when people recruited upon graduation can be easily compared to those recruited mid-career. With promotion based on age or tenure the company does not necessarily capture the loyalty inherent in being a lifetime employee. Yet rewarding loyalty and seniority can undermine meritocracy in foreign firms where peer pressure is subsumed to individualism. As such, personnel practices exemplify the practices, processes, and roles of employees most likely to characterize the firm's adaptation to the environment.

Personnel practices also highlight the role institutional theory plays in explaining organizational behavior, given that the performance standards for personnel practices are less clearly measurable by various performance measures such as profit or market share than are manufacturing or sales (Westney 1989: 11; Meyer, Scott and Deal 1983). Similarly, since personnel department output is not clearly measurable and self-explanatory, there is an increased need for the personnel department to seek legitimacy and emulate leading organizations to rationalize or justify its choices. At the level of the personnel department, one consequence of isomorphic pressure is the rationalization and legitimacy of personnel practices because they cannot be effectively implemented if people do not perceive them to be fair and legitimate.

Chapter 7: Performance appraisal practices of large Japanese firms.

This chapter reviews performance evaluation in Japanese companies in the following areas: self-evaluation, management by objectives, employee ranking, evaluation criteria, and annual scheduling of employee evaluations.

Evaluation methods and practices. Yagi (1992) describes the performance evaluation of NKK employees in great detail. First, managers evaluate the performance of their subordinates using several formats. Employee evaluations are checked by both the immediate supervisor and a more senior supervisor. Finally a general manager and the line-managers of a department rank the employees in their department and submit a ranking list to the division personnel section where written data are stored for three years. The personnel department regrades the evaluations and rankings into 9 grades which apply to most of the firm. Most of the information from the formats is coded and computerized. All formats except for the management by objective format are sent to the personnel department, so that the personnel department has access to computerized data and detailed written information on all employees.

Management by objective systems. NKK's management by objective format outlines each employee's tasks and schedules for completion, as well as evaluations by both the employee and his boss. The personnel department does not gather this information but asks managers to use it when they conduct interviews with their employees. Though written objectives help employees to understand their tasks, managers react reluctantly to the format because it takes considerable time. After introduction of this format in 1986, its use has faded in NKK. Another reason for its decline is that managers do not stress the management by objective method.

Management by objective works in sections where it is easy to set up yearly objectives, but there are not that many sections whose businesses are stable enough to set up simple objectives. Japanese face businesses that are not limited, and they must be able to cope with changing situations flexibly. Yagi suggests that a simple achievement-oriented evaluation and promotion will not and should not be accepted.

Self-evaluation (*Jiko-Shinkoku-Hyo*). The self-evaluation format is quite important for both managers and for the personnel department to know each employee's opinion about his or her achievement, work load, assignment requests, and family issues. The self-evaluation gives insight into individual employee difficulties and reasons for requesting personnel transfer. It is hard for an individual employee to show his/her capability fully when s/he has occupational problems or even personal problems .

A personnel manager at NKK may read more than 3,000 self evaluations (out of 10,000 white-collar employees) during an evaluation period, which are then entered into a computer data base for future reference. With experience, a personnel manager can identify a struggling employee in minutes. Though employees may not mention occupational struggles directly, their requests and reasons for personnel transfer and explanation of their work load often indicate any trouble. With private issues, an employee's even touching moderately upon the issue may suggest some problems there. Usually only one out of 50 employees has problems. Personnel managers contact them directly or speak with their managers or advise other personnel staff to do so and are often able to prevent employees from quitting their jobs by encouraging them to transfer to another task. Japanese personnel managers perceive that it is very important to relieve each employee from his/her anxiety because they have to maximize personnel utilization under conditions of lifetime employment.

Achievement and capability evaluation format (*Gyoseki-kisei-Hyotei*) .

The achievement and capability evaluation is completed by the first and second tier managers of the employees under evaluation. It includes information about achievement, capability, potential, personality, working behavior, suitability for current tasks and employee's desires. Because the managers know that this format has to be submitted to a personnel section and that it is an important information source, not only for ranking of their subordinates but also for their personnel transfer, they must observe their subordinates carefully regarding the information above and have interviews with them to confirm the information. Thus, achievement and capability evaluation plays a role as a guideline for managers to deal with their subordinates.

The achievement and capability evaluation plays an important role as a check on managers. When an employee becomes a candidate for personnel transfer, his achievement and capability evaluation is exchanged through departments. Therefore, if his manager's evaluation of him was too severe or too indulgent, his ability to evaluate people becomes distrusted. Managers who do not evaluate people fairly and therefore can not instruct them become regarded as unqualified managers by the personnel department and other managers. Managers who evaluate their subordinates highly during evaluation periods but try to exclude them when planning transfers also lose their credibility for personnel matters.

Ranking employees. A ranking meeting under a general manager of a department is a good chance for a personnel manager to understand and confirm each employee's performance and personality. In order to evaluate staff members of the department, all managers discuss attitudes toward performance, and the capability and potential of their employees objectively. Yagi usually prepared his ranking for a department based on daily conversation and former evaluations. If

NKK personnel managers find great differences in their ranking of an employee, they ask his manager some questions about whether he has stopped improving, whether suitable tasks have been given to him, and whether there is any reason other than business, namely personal reasons, for his change in performance. Most personnel managers encourage line managers to treat their subordinates so as to display their ability fully. This meeting is quite useful not only for evaluation but also for personnel transfer. If the personnel department finds someone who is not suitable in his current job, they can give him another chance by a transferring him to another position. Again, this opportunity is also valuable to get to know managers themselves. Personnel managers know who are good at managing and instructing people and who are not.

Personnel managers' responsibilities. Several members of the first section of the personnel department make up a team for evaluation responsibilities across the company, and each of them is in charge of one or two of the eleven grades. Each member of the team leads divisional personnel sections to set up policies for the evaluation and to adjust their ideas and to authorize final decisions of the evaluation.

The general manager of the personnel department and the manager of the First Section are responsible for evaluating upper managers (grade 3 and higher). Each team member is also responsible for the evaluation of lower manager levels (grade 2 or under) of a few functional departments at headquarters.

In order to distinguish as much personnel information as possible, personnel managers open their own information on employees to all team members. Though each team member is in charge of only one or two grades, the member has a great deal of personnel information on the assigned departments through the daily business of examining personnel transfers. Personnel managers are quite sensitive

and pick up personnel information at any chance, for example, at meetings with general managers about personnel transfers, at training opportunities held by the personnel department, during daily conversations with employees, and even while drinking sake with them. The following two sections explain the final evaluation ranking by personnel managers for the rank-and-file and for managers.

Evaluation of the rank-and-file. The purpose of the personnel system for the rank-and-file has been to maximize the potential capability of young employees. Therefore, evaluation of them is executed from an educational point of view.

There are two grades for the rank-and-file with bachelor's or masters' degrees: R 1 and R2. Employees in each of the ranks are classified into seven ranks (1 to 7, in order of superiority). The final distribution of the seven ranks for each grade is decided in advance: 5% in rank 1, 10% in 2, 20% in 3, 30% in 4, 20% in 5, 10% in 6, and 5% in 7.

A standard university graduate follows an evaluation record as 6-5-4-3 -2 in R 1 from the second year after entrance to the sixth year (his first-year performance is not to be evaluated). Then he passes an exam for R2 and is evaluated as 6-4-2 ranks in the grade for three years.

Due to the differing number of peers entered in the same year, ratios of evaluation distribution in each peer group vary slightly year to year but the basic ideas are the same. All the peer groups are "evaluated" as rank 6 and 5 for their performances in the second and third years respectively. (They are outside of evaluation in the first year service by an agreement with the union.) Though they are included in the evaluation process, the personnel department gives the same ranks for their second-year and third-year performances. NKK personnel managers generally feel that the typical university graduate takes three years to display his real ability. If the personnel department evaluated young employees' capabilities at their

second or third year of service and gave different ranks to them, they would be stirred into short-run output rather than more profound contribution to their jobs. They should be taught by their superiors how to do their jobs in the first year of service, and they should implement what they have learned in the second year. Understanding current ways of doing business, they might show their creativity and change their businesses in the third year. Only then is their creativity based on deep consideration of their tasks throughout the organization as a whole. If Japanese organizations pressured employees to achieve immediately, they would be inclined to pursue short-term and probably superficial outcomes. The first three years are seen as important for imprinting the proper way of conducting business. Learning to view their tasks in the long run and give their work profound consideration sets the course for the rest of their service to the company.

Because Japanese organizations assign employees their first jobs without knowing the employees' strengths or preferences, even if some employees do not reach a certain level of achievement, personnel staff encourages these employees' superiors to give them other assignments or even to transfer them to another section when appropriate. In the fourth year of service, employees' evaluated ranks are slightly differentiated into at most three ranks. Usually the largest number of them are situated at the center rank of the three and their average rank is raised one by one annually. Therefore, it is rare that a senior is surpassed by a junior. Since young employees do not know how they stand relative to other employees, they often feel that if they work hard, they will have a chance to become an upper-middle-level manager (bu-cho). This has the effect of drawing out greater productivity than if people perceived no future to their current position.

Evaluation of managers. Managers are evaluated on a wider range of criteria with a greater emphasis on achievement than are the rank-and-file, whose

evaluations are based on a training point of view and who would not be differentiated widely until being assistant managers. (Evaluation of assistant managers has a middle phase in between nonmanagers and managers in transitional periods.) Especially after the review of the NKK personnel system in 1986, the personnel department has shifted a key factor of evaluation from long-term capability to short-term achievement while keeping promotion based on long-term capability.

There are six grades for managers. Managers in each grade are classified into five ranks: A, B, C, D, and E (from highest to lowest respectively). An E rank is a punitive rank and so is applied to very few managers, and only on a case-by-case basis. The defined ratio of the remaining four ranks is 25% each. By definition, evaluation of managers should be done irrespective of peer group and seniority. Yet, actual evaluation ideas of general managers tend to be substantially related to seniority. There are three possible reasons for this tendency: (1) General managers tend to evaluate their subordinates by seniority rather than by achievement because they are accustomed with the seniority-based evaluation methods; (2) level of achievements by managers are strongly correlated to seniority because their abilities are formed by experiences; or (3) the achievement level is so because their general managers give them challenging tasks on the basis of seniority. All of the three affect somewhat the evaluation results but reason (3) is serious. Even though the personnel department has changed its evaluation and promotion system, if organizational circumstances do not fit the system, the system can hardly work as expected.

Differences due to academic achievement. The reason why a university graduate starts from rank 6 rather than rank 7 in R 1 is the existence of high school graduates. They start from a grade that is two ranks lower than the university

graduates and are evaluated and promoted on the basis of their performance. (They start from grade C1 and then are promoted to C2. When they become R1 from C2, they are usually evaluated at rank 7.) Although university graduates are treated as one identity group, high school graduates are treated in a totally different manner. Even if a high school graduate went on the fastest track, theoretically he would be an assistant manager at the age of 33, two years later than a university graduate, but the actual difference between high school graduates on the fastest track and standard university graduates is 4 to 5 years rather than 2 years. High school graduates do not seem to be given sufficient opportunities to show their abilities and as a result, their promotions are delayed.

Evaluation procedure. The evaluation procedure begins in September and finishes at the end of January as follows:

September 1: Deliver formats for evaluation, including formats for self-evaluation and request and appeal to the company (Jiko-Shinkoku-Hyo, self evaluation) and for evaluation of achievement and capability by managers (Gyoseki-Tekisei-Hyotei, achievement and capacity evaluation).

September: Each employee fills out a self-evaluation format and his manager interviews him. They use a "Management by Objectives (management by objective)" format to discuss his achievement.

Mid-October: A middle manager makes a rank list of his subordinates .

Late October: Middle managers finalize their rank list of their department in a ranking meeting under a general manager (at least a personnel manager attends the meeting). The general manager submits the list to a division personnel section (or to the personnel department in the case of functional departments at headquarters).

Early November: Each division personnel section (or the personnel department) receives information on employees from managers.

Late November: Each division personnel section (or the personnel department) makes an evaluation draft of the division's employees.

Early December: The personnel department holds the first big meeting to adjust the draft.

Mid-December: Each division personnel section (or the personnel department) reviews its first draft and makes a second draft.

Late December: The personnel department holds the second big meeting to fix evaluation results for the company as a whole.

Early January: Each division personnel section (or the personnel department) reports the results to general managers. There is a small amount of room to adjust the results in case of a strong claim from the general managers .

Mid-January: The general manager of the personnel department approves the final evaluation results. The President has the authority to approve the final evaluation for M5 and M6 and a Vice President in charge of personnel management does M3 and M4.

This procedure is quite important not only for evaluation but also for data collection for personnel transfer and motivation of workers, and many written evaluations are stored for three years or longer in a computer data base.

Chapter 8: Training practices in large Japanese firms.

This chapter first outlines management track training practices in large Japanese firms, focusing on: 1) entry level training, 2) on-the-job training and functional training, 3) management training, and 4) international training, drawing on various training programs in Dai Nippon Ink and Chemicals, NKK, Fujitsu, NEC, and Toshiba.¹⁴⁰ It then describes the white-collar training practices of American manufacturers in Japan briefly, as there is very little literature on the subject.

Management track employee education in large Japanese firms generally starts with very intensive training for the newly hired and then continues on through training for supervisors, section chiefs, department chiefs, division chiefs, and so on through every level of the organization. Employee training in large Japanese firms is generally a highly structured and stratified process, with new and practical material awaiting the employee at every step of the career ladder in the firm, followed by qualifying exams preceding each successive promotion. In addition to managerial training associated with taking on more general management responsibility, there is also regular and systematic education across every functional specialization, whether it be sales, production management, accounting and finance, or other main functions within the organization.

Entry level training in large Japanese firms. New employee orientation programs in Japanese companies are very important and much more heavily emphasized than those in most U.S. companies. Such programs are used both for rank-and-file workers and for entry level managerial aspirants.

¹⁴⁰This section draws strongly on Yagi (1992) as well as materials supplied by these companies.

In Dore's classic 1973 study of Hitachi, newly hired management track employees spend their first two years in the company as management trainees. During the first two months of their employment, April and May, all new Hitachi employees collectively attend an induction course which includes visits to some of the firm's factories, and lectures on the structure and history of the company, together with a few broad lectures on management science and engineering technology. An important part of this entry level training is the process of being socialized into the Hitachi community. As the official description of the course puts it, it is designed to enable new graduates to grasp the history of the company and of its separate establishments; further it seeks to develop within them the spirit and attitudes appropriate to Hitachi men, and, while imparting certain basic knowledge and skills relevant to their professional status as technologists and managers, to promote the development of character and of their general education.

Fujitsu's 1992 educational documentation puts the goal of entry level training programs as helping "new employees adapt themselves to Fujitsu's world by providing detailed information on Fujitsu and its business life." Fujitsu's entry level training begins with an introduction to Fujitsu for all employees, covering Fujitsu's various business lines, corporate philosophy and strategies, and organization. The general entry training also addresses business communication, business ethics, work regulations, industrial safety, etc. Each division then conducts the next phase of entry level training internally, focusing on business communication and business ethics within that function, as well as technical skills such as computer systems, communication systems, and electronic devices required for each division (Fujitsu 1992).

The Japan Ink and Chemicals Corporation program starts several weeks before the official entry ceremonies on April 1.¹⁴¹ This date is said to reflect an historical situation in which military recruits started their military careers, to which other societal institutions had to adjust. Thus all Japanese companies and schools start their orientation programs at the same time. The entry level program begins by learning the company anthem and distributing company lapel pins and name cards, and concludes April 1 with inspirational talks by the chairman of the company and a recital of the corporate pledge, which makes the assembled individuals into official employees of a company with all the rights and obligations that creates.

The Japan Ink orientation program provides entry level training for all entering employees, including high school graduates who are to be office workers or clerks, junior college employees who also will work in an office, four-year college graduates who are to be entry level managers, and also a number of graduate students with masters degrees in technical subjects, particularly chemistry.¹⁴² These latter two groups enter the company's technical ranks to work in research

¹⁴¹Special thanks is due here to Mr. Kawamura, president of Dai Nippon Ink and Chemicals Corporation for providing me with the materials for this section and for allowing me to attend the entry level training program. Dai Nippon Ink and Chemicals (DIC) was founded in 1908 as a producer of printing inks but later diversified into a variety of chemical products after World War II. Its primary products are still printing inks, organic pigments, and synthetic resins. The company dominates the market for its inks in Japan and with this maturity decided to expand its overseas operations in the 1970s. It has acquired some U.S. ink producers and also producers in other countries in addition to establishing sales offices around the globe and being involved with several joint ventures to improve its distribution capabilities. Inks for high-speed offset printing equipment cannot be transported long distances because of certain chemical reactions, so the company is continuing its attempts to increase sales by setting up local production facilities in various countries. The company has facilities in Indonesia, Korea, Hong Kong, Kenya, Mexico, China, Taiwan, the United States, Malaysia, and other countries. One of the problems in managing such a worldwide operation is in attempting to achieve some sense of overall company unity. While there are many approaches to achieving this, the company's orientation for new employees is one means.

¹⁴²All these different groups of employees sit in assigned seats and are grouped by educational level. The dress of the various groups is quite different. The recent college graduates all have on very nice suits which look brand new and expensive. The high school graduates who are to be factory workers dress in a less sophisticated manner, with one woman even in stylish jeans. The young women who are to be office workers dress in a wide variety of outfits some very informal such as mini-skirts and some with more professional-looking suits. Each group tends to keep to itself and only communicates within its own group.

laboratories or be involved in work with the technological processes employed. All of the groups receive the same general overall training during the first week of the orientation program.

The first week of training focuses on the history of the company, its traditions, the company's organization, the company's many products, as well as market share for various products. The effect of this in a large Japanese company is a feeling of awe in being a part of an organization that spans the globe and puts products in every Japanese home or work place. All employees were given a plant tour and were also allowed to view the company's private art museum.

One day is spent on the company's TQM (Total Quality Management) program. Here the new employees are told about how the TQM concept applies to their job, and how even support staff have as their customers the other company personnel who use their outputs as their inputs. Examples are given from the operation of the copy center and how it is important to avoid the typical errors made in a copy job and what these errors are. A great deal of stress is placed on keeping internal company customers satisfied, likely because many of the employees present will have little contact with customers from outside the firm. The orientation program covers the company's quality circle program in some depth. The employees are told that there are about 500 quality circles in the company, with about 6 or 7 members in each group. They are told how these groups operate and what the expected behavior for quality circle members is.

Etiquette is given a great deal of attention the first week. Employees are taught to bow correctly, and every morning before the training lectures begin, all the employees stand together and bow simultaneously to the supervisor conducting the

training at the direction of one employee calling, "Rei" (Bow).¹⁴³ Great emphasis is also put on proper telephone etiquette, with different greetings and levels of politeness used for answering internal calls and calls from outside the company. Complementing this, instruction is given on greeting supervisors, clients, and visitors from outside the company, presenting business cards correctly, and following up on meetings.

In addition, the first week's orientation program pays great attention to employees' personal health and attitude maintenance, stressing the importance of eating a good breakfast before coming to work, the value of exercise and other activities to maintain health, the importance of going to bed early before a working day, the importance of carefully planning the best route to work, the necessity of getting to work on time, and the strictness of the company rules on missing any work days.¹⁴⁴ In addition, entry level training addresses: 1) the rights of employees as established by national laws and by the labor union contract were covered, 2) the benefits the company provided its employees. Safety matters were discussed at some length.

Toward building cooperative group behavior, two days are devoted to exercises in solving puzzles which requires the participation and cooperation of all members of the group. In addition to receiving training together, they often stay in one or two company dormitories and live together for a month (Yagi 1992). Thus they create a firm network which usually continues until their retirement age or beyond, and through which they contact each other officially and privately.

¹⁴³Attempts are constantly made to excite the orientees. Each day they have to give a collective hello to start the day and were constantly asked to be more enthusiastic. By the end of the week they give the morning greeting in a much more enthusiastic manner than when they started the week.

¹⁴⁴Those attending the lectures show varying amounts of attention. The young women seemed to be the most bored and spend considerable time in fixing their hair, adjusting their makeup, and similar activities. The technical personnel seem less interested in the subjects covered than the entry level managers.

Employees entering in the same cohort (*Douki-kai*) develop interpersonal bonds that are similar to the bonds between alumnae of the same university and graduating class. Even though this entering group of employees will go into different parts of the company, their bonds from this experience serve to form a network, facilitating future interaction and cooperation between departments at each level of management as each cohort moves up the corporate ranks simultaneously through out the company. As communication across departments is usually conducted through middle management and then disseminated to the rest of the department, communication among a cohort across departments is thus further facilitated by the fact that with seniority based promotion, these managers will continue to be roughly the same rank throughout their careers.

After the first week, the various groups separate for orientation training that is more relevant or specific to their work. The entry level professional and managerial level employees are then given special orientation programs for another month that relate more specifically to their future careers in the company. For example the technical personnel are given information about the company's products expressed in chemical formulae. The entry level managers are given training in interpersonal communication and decision making. Similarly, those hired for entry level managerial positions are given books and booklets focusing on such subjects as the principles of management, marketing, and finance. Since many of these were liberal arts graduates these are new subjects to them.

On-the-job training. On-the-job training is more wide spread for blue collar workers than it is for white collar workers. However, at the beginning of their careers, managers all serve a stint working on the shop floor to enhance their understanding of the fundamentals of the business. Japanese companies assign their new employees to the manufacturing and/or sales front lines for several years of

training and education to familiarize themselves with "where the action is" (Kobayashi 1991). During the first decade of an employee's career, wages are very much seniority-based, such that the entire "class" makes basically the same salary as it goes through this demanding experience. Typically, this will include, for instance, two years in sales, a year and a half in production, two years in personnel, two years in accounting, and whatever else the company thinks the new employee should be exposed to.

In Fujitsu (1992), on-the-job training for management track employees often focuses on creativity, leadership, problem solving and decision making, accounting, marketing, management control, etc. Functional training occurs in each division (e.g., sales, information systems, accounting, etc.), and specialized training programs are conducted by each business unit. In the systems engineering group, for example, the following programs are provided for systems engineers as guided by the systems engineering group: 1) junior and senior systems engineering training, communication skills, presentation skills, leadership, strategic marketing, etc. Professional education programs may also include off-site study at domestic universities in areas such as operations management and information technology. However, these off-site training programs are generally a regular part of functional training and are not included in the regular program at companies such as NKK.

Compared to substantial on-the-job training for blue collar workers, on and off-the job training for white-collar workers is perfunctory. NKK invested significant amounts of time and money in setting up consistent programs and training facilities for training blue-collar workers on the job, but only invested less than 10 thousand yen per employee annually for all 550 white-collar employees in Keihin Steel Works (this ¥5 million budget did not include facility costs and personnel expenses and so was used mainly for course attendance fees and expenses

for teaching materials). Compared to an attendance fee of ¥30,000 for a course outside the company, the amount was quite low. The male college graduate ends up costing the company about ¥200 million over his working life (Kobayashi 1991).

Management advancement training. Managerial advancement training is designed to give each level of management the managerial skills to manage subordinates, to allow managers to take on additional responsibility, and motivate managers to maintain their contribution to the company. Fujitsu is generally regarded as having some of the most advanced management track and international training, particular programs conducted at the Fujitsu Institute of Management (FIMAT).

Programs to prepare managers for promotions are held at several levels of middle management. First, Fujitsu offers general management training programs for staff (aged around 30 years) who wish to improve their skills as leaders of their section staff. Each staff member must take the following programs within three years after promotion to the employee grade of "*shuji-ho*" or "*gishi-ho*." This staff training program consists of a 5-day general training program focusing on leadership, problem solving and decision making, mental hygiene, etc. This is supplemented by a 6-month correspondence course which covers strategic management, management organization, personnel management, finance and accounting systems, production control system, and marketing. Staff training then concludes with another 3-day general training program which ties together various skills emphasized in a case study approach.

Section manager candidate training. Candidates for section managers are recommended by their supervisors for this annual training program. These programs are intended to inform the candidates of their management responsibilities and to develop their managerial ability. Those who pass the company's standards are

appointed section managers. The section manager preparation program consists of on-the-job training focusing on research on specific issues or projects. Each candidate selects a theme and researches it under the supervisor's guidance. This research project is intended to develop the following skills: planning, cost consciousness, managerial leadership, research and analysis, and job efficiency. After completing this research project, the section manager candidate presents it to the board of directors. After training the section manager candidates, managers of Personnel Division interview each candidate to verify the candidate's suitability for section manager. Passing skills examinations is also common practice for promoting employees to the next level.

Upon promotion to section chief, "*ka-cho*," there is a 5-day management training program. In addition, section chiefs receive training throughout their first year in that position, consisting of a lecture by board directors (1 day), lectures on management skills (2 days), and a management development program (9 days). In their fourth year as section chiefs, Fujitsu managers receive two weeks of advanced training. This section manager training program is intended for those who have been working as section managers for four years. Each trainee must take a program to develop management skills in one of the following topics: global business, product/marketing strategies, marketing, management organization, or personnel management.

Upper middle management training. At age 45 all Fujitsu managers and specialists of Fujitsu are released from current duties to attend intensive training programs (7 weeks for managers and 4 weeks for specialists) at the Fujitsu Institute of Management (FIMAT). Each trainee learns both managerial skills and also cultural activities such as art and music to enrich various aspects of their lives.

In NKK, in addition to skill training, management training provides two important additional benefits: motivation and personnel networking. NKK motivates its employees in this management training by setting meetings or conversations with executive directors and sometimes the president of NKK. This interaction with upper management provides employees with insight into the basic strategy and policies of NKK, as well as the underlying criteria for assessing strategy.

The other benefit of bringing together managers from different divisions of the company for general management training is the opportunity for expanding and strengthening relations between departments through personnel networking. In NKK's management training program, twenty to forty employees stay at the training center for two or three days. They discuss not only themes of the program but also their tasks in their positions while socializing after class. Because managers of the same rank are trained together, they often face similar management problems and responsibilities in terms of the numbers of employees they supervise, the size and scope of budgets they oversee, and the role they play in implementing corporate strategy. Training together for management promotion allows managers to discuss and exchange ideas for solving related problems.

International education. Internationalization programs are generally the only off-site job training that is a regular part of the systematic education programs of large Japanese programs. These programs generally consist of foreign language and inter-cultural communication, overseas assignment preparation, and overseas studies in professional graduate programs. Like that of many large Japanese manufacturers, the aim of NEC's international education programs is to promote the internationalization of the entire company by developing staff capable of handling overseas operations (NEC 1991). Specifically, NEC's international education has three goals: 1) internationalization of the whole company, 2) strengthening

international operations, and 3) strengthening the overseas affiliates and offices. NEC's goal is to develop a cadre of international managers who demonstrate: 1) effective business performance, 2) international communication skills, 3) the ability to adapt to a different culture, especially in terms of international outlook and sensitivity, 4) the mental capacity for self-help, and 5) a more dynamic ability to perform.

NEC's international education programs are broken into 7 basic categories:

- 1) International communications programs, focusing on conversation, writing, and presentation skills in English and other foreign languages, and foreign language certification tests.
- 2) International management programs, with particular focus on managing local personnel, evaluating the current political and economic situation, and learning about local religion and health matters.
- 3) International business programs, focusing on local trade, finance, law and contracts, accounting, marketing, overseas construction projects and production.
- 4) Area studies programs.
- 5) Orientation program for families of staff posted overseas.
- 6) Programs for staff on assignment overseas, focusing on production control, sales, accounting, personnel and labor issues, and general education.
- 7) Returnees programs, updating returning employees on developments in the company.
- 8) Overseas studies at Harvard Business School, University of Michigan Business School, IMEDE in Switzerland, or domestic programs through McKinsey Japan or the International University of Japan.
- 9) Overseas operations training, on the job training in NEC's overseas operating subsidiaries.
- 10) Training for local staff in overseas operations through courses held in Japan to deepen overseas employees' understanding of both Japan and NEC's operations and management.

Foreign language education. In Dore's classic 1973 study of Hitachi, he notes that "many workers were teaching themselves English in an amateurish kind of way and the firm was contemplating conversion to English terms for all parts and specifications--many of which are already in Japan-glish, anyway. This was intended to aid export efforts."

Now most large Japanese firms offer English conversation classes at various levels inside the company. At NKK, six hundred employees are usually enrolled in the classes.¹⁴⁵ At Fujitsu, new language classes begin every 6 months at most of its offices, laboratories, and factories. Employees who want to learn English or other languages can attend the class twice a week, after work. Fujitsu holds intensive 2-week English courses six times a year for employees who need to learn English for overseas business trips. In addition, Fujitsu provides 2-5 day intensive courses in business English, which focus on telephone conversation, presentation skills, and basic communications. In NKK's intensive language course, fifteen employees who have higher English conversation skills stay at the Education Center for two weeks of intensive English immersion. They read English newspapers and magazines, watch English programs, and discuss many subjects in English. After this, twenty employees are selected to study English in the U.S. or the U.K. for five weeks. They go to language school during the day and stay with host families. This integrated program is good for learning English. However, it is a little impudent to call it an "internationalization" program because this program does not provide a sufficient introduction to the necessities of global business.

Language study is complemented at Fujitsu by 3-day programs for intercultural communication to address frictions caused by cultural differences between Japanese and non-Japanese which are perceived to be "becoming a serious problem with the progress of globalization." These programs are intended to inform employees of the cultural backgrounds of other nations to get over such cross-cultural frictions in business and in office relations. Following this, Fujitsu provides 2-week pre-departure preparation for employees going on business trips or on

¹⁴⁵Young employees are the main attendees. They pay about ¥15,000 for a routine class of four months, although all other courses are free. There are about 60 classes and each of them contains about 10 students. They attend two 90-minute classes a week, which are taught by 15 native English speakers and are widely categorized, from "baby" English courses to business conversation classes.

overseas assignment to a branch office or to an affiliated company to gain experience in overseas business operations. These programs, called "World Seminars," are conducted by the Fujitsu Institute of Management (FIMAT).

Study abroad programs. To provide insight on global operations as well as to develop relationships with other fast-track employees in other Japanese companies operating abroad, Fujitsu's Personnel Division selects several employees each year to attend 2-year MBA programs at Sloan, Wharton, or Keio Business School. In addition, Fujitsu also selects managers to attend 5-11 week advanced management programs conducted by overseas business schools such as Harvard Business School. In particular, Fujitsu is a major sponsor of the Japan-America Institute of Management Science (JAIMS) in Hawaii, where it sends employees to learn management science and American ways of management in a five-months program conducted mostly in English. In addition, several employees recommended by the legal division and selected by the personnel division are sent to law schools in the United States to acquaint them with overseas legal affairs.

To keep abreast of technological advances abroad, Fujitsu sends its employees abroad to overseas institutes of technology and laboratories as visiting researchers (1 year) or as students of master's courses (2 years). In addition, Fujitsu also sends employees to overseas affiliates as trainees to learn overseas business operations.

NKK's personnel department sends 15 employees to study abroad every year: three of them go to business school and/or law school, mainly in the U.S., and the rest go to technological institutes or colleges in the U.S. or Europe. The very first employee went to study abroad in the 1960's and a few researchers per year were sent thereafter to Europe and the U.S. to absorb new technologies. They brought back new technologies to NKK's facilities and learned the European and American

ways of thinking and pursuing facts free from traditional ways of thinking. As a result, NKK was often the first to introduce the latest technologies in Japan; for example, it introduced the first converter in the iron refining process. NKK started to send its employees to foreign business schools in the late 1970s and adopted an official notice and self-application system for studying abroad. Before 1988, NKK only chose those who had the strongest complaints, who could speak English most fluently, and who their organization could easily spare. As a result, usually they were not the best persons to use the opportunity and return its fruits to the company. The personnel department regarded study abroad as a means of developing an employee's English education rather than as an opportunity for managerial career development.

Overseas regional training centers. In the financial and securities industries it is common to train overseas staff to provide workers with a knowledge of Japanese markets (Kagono 1991). Japanese manufacturers are increasingly providing overseas training as a means of standardizing procedures and information across foreign subsidiaries, as well as providing coordination.

Matsushita in the early 1990s established training centers in the U.S., Germany, and Singapore for the local staff in the Americas, Europe and Asia (Newsweek, 10/5/1991: 12). The centers are used by overseas subsidiaries to train their staff members. Matsushita's plan calls for the training of middle managers to take place at the regional level, while senior executives, including directors, department managers, and plant managers, receive their training in Japan. Therefore, most of its foreign employees---84,000 people---will be trained in the region in which they work. The head office will then establish supervising firms in each area in charge of development, manufacturing, and marketing.

The centers will be used by Matsushita subsidiaries in each region to spread Matsushita's management philosophy throughout the worldwide group. Training

systems will probably be standardized over the long term with the aim of developing a global staff which can function anywhere in the world. The goal of standardizing programs is to unify diverse operations and give them greater flexibility in transferring employees within regions.

Toshiba also organizes semi-annual international management training, bringing together managers from subsidiaries worldwide for 2-week courses (Yano 1992). In this training they are introduced to Toshiba Group activities beyond those of their own area of concern, as well as offered the opportunity to work with the headquarters divisions related to their own company. They also follow a rigorous schedule that reinforces their understanding of corporate philosophy and policies, guiding principles for management, and a better understanding of Japanese-style management.

One of the aims is to encourage local managers to graft proven elements of the Japanese management system onto their own practices, to create what is called a hybrid system that incorporates the best of both the local system and Toshiba's management practices. It must be stressed that this is done only to the extent that it is possible to do so within the culture and customs of the overseas country, and there is no set of management practices as such that have to be introduced.

Another example of the support offered is to be found in training courses that bring together managers working in the same field for training in Tokyo. In Toshiba's Public Communications Office, a ten-day training course for PR managers in overseas subsidiaries was introduced two years ago. The first session was attended by nearly 30 managers, and proved particularly successful in cementing a stronger sense of a shared purpose and recognition of the need for close communications and integrated group activity. One of the positive results was that it encouraged subsidiaries to work more closely together in public communications in each region,

integrating the several strengths of the operating companies and helping to advance group identity.

These training courses enhance relations and communications with Tokyo, allow managers to add to the skills they bring to the job, and give them a greater insight into Toshiba that they can pass on to other local staff on their return (cf. table 14).

Problems with training. Some Japanese companies feel that on-the-job training limits their chances to learn from outside companies, although the training of skills and know-how is satisfactorily done by managers. Since NKK is one of the leading companies in Japan, what it can learn from outside companies is relatively little. Yet, NKK's competitive advantages in management have been lost gradually over the last decade or two. For example, the utilization of information technology, the accounting system, establishment of strategy, and the personnel management policies of NKK were models for other companies for a long time but many companies have caught up to its level and some have even advanced management methods. On-the-job training is a good method to pass on currently held skills, but implementing new management methods may require the examples of other companies or research institutes. For example, understanding of information technology, corporate strategy, accounting and finance and so on are lacking. NKK's in-house professionals also lack deep understanding of and insights into their specific field.

The organizational structure of many Japanese firms is not good for practicing strategic education. Though education and personnel management are strongly related in terms of development of personnel capabilities, these functions were kept separate in companies such as NKK through the 1980s, and to this day the personnel department keeps employee information confidential. Even so, personnel

managers have close contact with managers and frequently talk about the insufficiency and/or improvements of their employees, allowing the personnel department to easily determine the necessity to educate personnel.

Employee development/training in American firms in Japan. Little research has been done on the training programs of American companies in Japan. One exception to this is TPF&C's 1991 study of employment practices of American firms in Japan. This study found that 88% of American firms in Japan offer formal training programs on a regular and/or case-by-case basis; only 9% have no formal training programs in Japan. For example, 77% of firms have an orientation program for new employees; 75% have some form of progressive/ongoing training program; 77% provide some form of English language training; and 82% provide some form of training outside Japan. Further, though smaller firms tend to be less likely to offer training programs, 71% of firms with under 20 employees offer regular and/or case-by-case training programs. However, only 38% have some form of career development programs, with larger firms being more likely to have them.

Chapter 9: Research Design.

This section discusses research design in terms of unit of analysis, sample criteria and sample frame development, controlling the sample, and method of data collection.

Unit of analysis and focus of interpretation. The unit of analysis in this research is the American subsidiary in Japan. The study focuses on personnel policies and practices such as recruiting, performance appraisal, compensation and benefits, and training when comparing the subsidiary to its parent firm.

While the focus of this research is on the subsidiary, personnel practices can be explored from and shed light on various levels of analysis not limited to the subsidiary. At the level of analysis of the individual manager, parental control can be examined through mechanisms such as the number and position of expatriates and local managers in the subsidiary. Similarly, one can draw inferences about the personnel department's role in personnel practices by the department's role in decision-making, selection of managers for training, and handling of grievances. Third, personnel policies and practices give insight into the organization's direction, pressure groups, referent groups, and structure. One can gain further insight about a firm or department by examining: 1) who is doing the training, 2) who is managing the program, 3) how, to what extent, and on which issues the department deals with other personnel departments in the parent firm or local environment, and 4) by examining patterns of personnel management (here, personnel manager backgrounds and exposure to the parent firm). Finally, one can draw inferences at the population level regarding the construction of the organizational field as discerned through relevant reference groups as well as those groups' influence on firm behavior. In

addition, this research will examine how firms in this industry or group get information, and how they perceive their personnel practices in the context of the personnel practices of other firms.

Justifying the focus on personnel practices and defining theoretical constructs. To measure a subsidiary's similarity to both the other firms in its local environment and to its parent firm, I focus on a broad spectrum of personnel issues in order to best compare personnel practices overall. As a focus, personnel practices and processes provide a setting in which institutional isomorphism will likely play a powerful role in explaining behavior primarily because the performance standards for personnel practices are not as directly associated with performance measures such as profit or market share as practices manufacturing or sales (Westney 1989: 11; Meyer, Scott and Deal 1983).

Sample criteria. To examine personnel practices in firms of similar industry affiliation, size and foreign capital investment, I focus on firms:

- in manufacturing
- with an American parent with 50% or more equity in the subsidiary
- with operations located in Japan
- with over 100 employees in its Japanese operations.

Using the Toyo Keizai Guide of Foreign Capital Affiliated Firms (*Gaishikei Kigyō*). I found 170 American manufacturing firms with at least one subsidiary in Japan meeting these criteria. Six of the 170 firms had more than one subsidiary in Japan meeting these criteria¹⁴⁶, but only one of the subsidiaries was counted to mitigate undue bias in favor of resembling the parent firm.

¹⁴⁶Interestingly, four of these firms were in the chemicals industry, and three of these chemical firms had at least three operations in Japan meeting the above criteria.

Justifying the exclusive focus on manufacturing. This study focuses on manufacturing to the exclusion of sales and service firms, on the premise that personnel practices (particularly those related to career development) differ depending on the type of firm. TPF&C's study (1991) illustrates this assumption nicely by noting as one example that the average percentage of labor turnover is twice as high in trading firms as in the chemical/ petroleum industry. Further, as manufacturing by its nature has different requirements than service industries, the recruitment, training, and evaluation programs are likely to reflect this difference, making it difficult to compare across sectors.

The personnel practices of shop floor workers will likely differ across industries spanning a spectrum of technology intensity, maturity and product life cycles, so that shop floor practices will likely vary between more rapidly changing industries such as electronics and more mature industries such as steel. However, the nature of personnel practices for white collar workers as discussed in preliminary interviews did not seem to vary much according to industry. Further, keeping possible industry related differences in mind, only more general practices were focused on here, and questions were asked with regard to product cycles and technical change.

Similarly, personnel practices likely differ according to the functions carried on by the firm at a given site. To control for these differences, I asked the firms to indicate which functions they carried on in America, Japan, and other Asian countries.

Justifying the exclusive focus on subsidiaries. Subsidiaries have been selected in order to focus on the coercive effect of parent firms on firms in environments with radically different HRM imperatives. Subsidiaries depend on

their parent firms for various resources in terms on capital, components and technology, personnel, and market access, among other things. Parent subsidiary relationships dramatically illustrate the pulls that these relationships can have. I defined American subsidiary here based on the equity being primarily held by the American parent firm.

As mentioned earlier, these radically different environments highlight the conflicting pulls the subsidiary feels to respond to the local environment while at the same time being able to coordinate operations smoothly with the parent firm.

Justifying the selection of firms with over 100 employees. Initial interviews suggested that personnel practices were not institutionalized in firms smaller than 50 employees spread over only a narrow range of operations. A minimum number of 100 employees thus was selected as the minimum criteria so as not to restrict unduly an already small sample. Indeed, including firms smaller than 100 employees would tend to distort the picture of management track personnel practices. As most management track employees in Japan are recruited as college graduates, one needs to find firms where more than just a few employees are college graduates. The TPF&C study indicated that only 23% of small firms (with less than 100 employees) recruited new 2- and 4-year college graduates while 81% of the larger firms (with over 100 employees) did. Thus, the smaller firms were likely to hire disproportionately smaller ratios of graduate recruits and possibly managers. Further, the percentage of 2- and 4-year college graduate recruits only varied between 76% and 78% for firms in the 100-300 range and 300-1000 range, while they fluctuated from 8% to 26% to 50% for the firms in the 0-20 range, the 20-50 range, and the 50-99 range.

Controlling the sample. To begin to address alternative explanations which might also explain similarity in organizational structure, I attempted to control my sample along the following dimensions: 1) Subsidiary and Parent size (in terms of capital, number of employees, and number of subsidiaries in U.S. and Japan), 2) Firm age, and 3) Functions internalized in the firm (for example, R&D, manufacturing, marketing, sales, distribution), 4) Number of expatriate employees. Initially, I had wanted to address these alternative hypotheses by stratifying along these dimensions, but a power analysis revealed that I would need a sample of 298 firms which is beyond the scope of my funding. By focusing on a narrower set of firms, I realize that I may not be able to generalize to all American firms in Japan. However, I believe that I am able to apply my results to more consistently to the firms I studied because they are similar in terms of size, American control, and manufacturing orientation. As well, I conducted additional in-depth interviews to compensate my limited external validity with greater internal validity in terms of understanding of the mechanisms involved with the transformation of organization forms and personnel practices.

Method of data collection. To explore personnel practices in American manufacturers in Japan, this study used both a survey instrument to maximize external validity at the population level and structured interviews to give deeper insight into the actual processes and mechanisms themselves. This study began by drawing on structured interviews to operationalize constructs and generate further hypotheses. Pilot interviews helped prevent me from subverting the actual personnel practices to my own preconceived notions of which ones were important.

Following this, I conducted a survey to quantitatively test some of the hypotheses suggested by institutional theory. In this way, I attempted to address

both issues of external validity and internal validity. From a population of 171 firms, the response rate was 32%, about average for social science research. Ultimately, my comparison groups will be: 1) American manufacturing subsidiaries in Japan, 2) their parents back in America, and 3) Japanese multinational firms in Japan. For the purposes of this study, I will begin by looking at the American parent and its subsidiary.

Representativeness of respondents: Who responded on behalf of the firms. I asked the participating firms to have the subsidiary head or personnel head fill out the questionnaire. I felt that the subsidiary head or personnel head was the person best suited to represent the firm with regard to management track practices at the firm level, because I felt that these were the managers in the firm most likely to have the work experience in both the parent and subsidiary firm as well as in personnel necessary to be able to compare parent and subsidiary personnel practices. Where possible, I requested that one person evaluate practices for both firms in order to control for respondent bias arising from multiple respondents with non-comparable perspectives. However, I asked respondents to ask for help on questions they could not answer themselves.

Two thirds of the respondents (N=55) were subsidiary vice presidents or presidents. Though the HRM heads did not have much experience in the American operations, Subsidiary heads had experience in the headquarters or other subsidiaries, 30% of the subsidiary heads (N=55) were reported to have spent 10 or more years in other subsidiaries of the parent firm with 40% of them (N=17) having spent ten or more years in the American parent.

**Chapter 10:
Large American manufacturers in Japan:
Descriptive statistics.**

This chapter describes the 55 Japanese subsidiaries of American manufacturers in this sample and their training, performance appraisal, and recruiting practices. As discussed in the research design, to examine personnel practices in firms of similar industry affiliation, size and foreign capital investment, I took my sample from the 171 American manufacturing firms in Japan with over 50% American equity and over 100 employees in their Japanese operations. This chapter describes these firms with regard to industry affiliation, American equity, firm age and length of time in Japan, the strategic role of the subsidiary in Japan, the functions undertaken by the subsidiary, the market orientation of the subsidiary, and its employee count and composition. It will then go on to examine the emphasis placed on various recruiting, performance appraisal, and training practices by the parent firm and the subsidiary in Japan.

Generalizability of this study to other American manufacturers in Japan. The American Chamber of Commerce (ACCJ) commissioned TPF&C Tokyo to do a study on the employment practices of American firms in Japan in 1991. That study differed from this sample in several ways. First, in the TPF&C study, 51% of the 204 ACCJ firms studied had fewer than 100 employees, while this study focuses only on firms of over 100 employees. In addition, 14 of the firms (7%) in the TPF&C study were in manufacturing, while 147 of the firms (72%) were engaged in sales and/or service. In contrast, this study focuses only on firms in manufacturing. Finally, the TPF&C study included joint ventures with more than 50% Japanese equity, while my study focuses more narrowly on firms with less than 50% Japanese equity.

Participation rate and non-responding firms. There were 171 American manufacturing subsidiaries in Japan with over 50% American equity and over 100 employees in their Japanese operations in 1992. Fifty-five firms (32% of the population) responded to my survey and are included in the sample here.

Table 10.1 compares my sample to the larger population of American manufacturing firms in Japan with over 50% American equity and over 100 employees in their Japanese operations to see if these firms have similar industry affiliation, American equity, employee count, and foreign employee count. T-tests indicate that the firms sampled do not differ significantly ($p < .05$) from those not responding with regard to percentage of American equity, employee count, and foreign employee count.

Table 10.1

Comparing means, standard deviations, and ranges of American equity, employee count, foreign employee count, and American equity of responding and non-responding large American manufacturers in Japan

Variable	Sampled Data		Non-sampled Data		Range
	Mean	Variance	Mean	Variance	
Percentage American Investment	83	22	85	91	50-100
Employee Count	11903	3566	1538	9599	100-24,677
Foreign employee count	6	1	5	10	1-50

Industries represented in the sample. Among manufacturers with over 50% American equity and with over 100 employees in Japan, the best represented industries in this sample include the medical supplies field, non-ferrous metals, electronics, electronics suppliers, precision machinery, chemical suppliers, automobile suppliers, and communications. Automobiles, machinery, and food and

beverages are not well represented in this sample, as demonstrated in Table 10.2 below.

Table 10.2

Industry affiliation of American manufacturers in Japan
that have over 50% American equity and over 100 employees in their Japanese
operations

	Sample (n=55) Number of firms in this industry responding to this survey	Population (N=171) Total number of American manufacturers in Japan with over 50% American equity and over 100 employees in Japan
Food and Beverages	1	8
Textiles and Clothing	0	1
Pulp and Paper	1	2
Chemicals	8	29
Medical Supplies	8	16
Petroleum and Coal	1	4
Plastics	0	3
Rubber and Leather	1	2
Glass	0	2
Non ferrous metals	2	2
Metalworking	0	3
Machinery	4	19
Electronics	9	29
Automobiles and Parts	0	4
Other Transportation	1	2
Precision Machinery	3	8
Other Manufacturing	2	7
Chemical Suppliers	3	5
Electronics Suppliers	5	10
Automobile Suppliers	1	1
Other Suppliers	2	7
Communications	1	1

Percentage of American investment in the subsidiary. Foreign investment in Japan falls into several distinct time periods corresponding to Japanese regulation of foreign investment.

The first phase of direct investment into Japan was from 1952-1964. During this period, it was possible to undertake direct investments in the "yen companies," companies established with converted foreign funds in which there was little restriction on investment and no restriction on percentage of ownership, which allowed foreign parent firms to move capital into Japan freely. An alternate route to direct investment in Japan during this period was through application to the Japanese government for investment approval, which brought with it guarantees of repatriation of earnings and capital.¹⁴⁷ Strict conditions usually were attached to investment approval and the proposed venture had to be seen as being in Japan's national interest, which came to mean introduction into Japan of unique technologies that could not otherwise be acquired. The investment had to be into a new company rather than an existing Japanese company, and the foreign equity participation was to be no more than 50%. (Fuji Xerox is one example of such a joint venture founded during this period.)

The next phase of foreign investment into Japan was from 1964-1973. With yen convertibility in 1964, the yen company avenue for direct investment was closed, and all direct investment required specific government screening and approval.¹⁴⁸ From 1964-1973, most foreign companies could only receive permission from the Japanese government to do business in Japan if they formed a

¹⁴⁷Even foreign companies established in Japan before the war required specific government approval in order to transfer goods, capital, or technology to their ventures in Japan. If capital was transferred into Japan without government assurance and approval, capital and earnings could not be repatriated unless or until the yen became convertible.

¹⁴⁸Texas Instruments, however, fought this regulation, and was allowed to attain 10% direct investment through first setting up a joint venture with Sony and then buying back its shares after 3 years.

joint venture partner. However, around 1966, the Japanese government underwent a great debate about liberalization, the opening of Japan to foreign trade and investment. Subsequently, in 1973, the Japanese government liberalized investment policy and allowed 100% direct foreign investment into new or existing Japanese companies, so that Japan became as open to foreign capital investment as any other of the OECD countries.

By the mid 1970's, regulations eased and firms were free, with few exceptions, to have wholly owned subsidiaries or branches in Japan. While many former joint ventures have been bought out by one or the other partner or terminated, many foreign companies prefer joint ventures as a means of acquiring personnel and supposedly more rapidly accessing the Japanese market. However, my interviews with several subsidiary heads indicated a developing philosophy that wholly owned subsidiaries maintain proprietary technology better and represent greater commitment to the Japanese market to Japanese customers.

Due to selection criteria, firms selected for this sample necessarily have 50-100% equity held by the American parent. American held equity overall average around 83% (s.d. 22)¹⁴⁹ and only one fourth of the firms have 50-50 joint ventures with Japanese partners. Of the 48 responding firms in this sample, over half (58%) have wholly owned subsidiaries, demonstrating the propensity of larger American manufacturers to enter the Japanese market through wholly owned subsidiaries rather than through joint ventures.

Firm age and length of time in Japan. According to a 1987 survey by the Japanese Ministry of Labor, 46% of the 2,600 foreign affiliated firms in Tokyo were established in and after 1979 when the exchange rate began to soar and boosted

¹⁴⁹The foreign investment percentage was taken from the 1991 Toyo Keizai Foreign Capital Firm Guide (*Toyo Keizai Gaishikei Kigyō*, 1991) which relied on Japanese government sources for these data.

Japan's economy. However, only 9% of the 55 firms in this sample were established after 1979, while 63% began operations in Japan before 1971 and another 18% began between 1971-1973 (see Table 10.3). This might be because most of the firms in this sample are among the largest American manufacturers in their field, and thus tend to be older and have more experience abroad, naturally leading them to consider entering Japan (among other country markets) earlier than other newer or smaller firms might. Large firms face the increased possibility of saturated home markets and hence have additional incentives to develop customer and supplier relations in Japan. (Firm purposes in the Japanese subsidiaries will be discussed in greater detail later in this section.) Illustrating the tendency of large manufacturers to be older, more than one third of the 52 American parent firms responding to this question founded their operations in the U.S. before 1900, while less than one quarter founded them later than 1950 (Table 10.4). Further, 44% of the 50 firms responding to this question first expanded operations overseas before World War II, and another third went overseas between 1950-1973 after World War II (Table 10.5).

Table 10.3
Years parent firms began operations in Japan
(Number of Firms Responding to this Question = 54)

Year operations commenced in Japan	Number of firms starting in that year	Number of firms are a percentage of sample
Before 1971	34	63
1971-73	10	18
1974-79	5	9
1980-1985	4	7
1986-1992	1	?

Table 10.4
Years parent firm began operations in America

(Number of Firms Responding to this Question = 52)

Year operations commenced in America	Number of firms starting in that year	Number of firms are a percentage of sample
Before 1900	20	39
1900-32	9	17
1933-49	11	21
1950-73	9	17
1974-1992	3	6

Table 10.5
Years parent firms undertook operations abroad

(Number of Firms Responding to this Question = 50)

Year of undertook operations abroad	Number of firms starting in that year	Number of firms are a percentage of sample
Before 1900	5	10
1900-32	17	34
1933-49	6	12
1950-73	18	36
1974-1992	4	8

Table 10.6 provides the Pearson correlation coefficients for the two-way correlations between founding of operations in the U.S., abroad, and in Japan, as well as the undertaking of R&D and manufacturing in Japan.¹⁵⁰ As expected, early founding in the U.S. is very strongly correlated with early establishment of operations abroad ($r = .8$, $n=50$). Early founding of operations at home and abroad

¹⁵⁰A high correlation coefficient (close to 1 or -1) suggests a strong positive or negative correlation while a correlation coefficient of zero suggests not correlation between two variables.

respectively are also strongly correlated with early founding of operations in Japan ($r = .46$ $n=52$, $r=.47$ $n=50$). However, counter to expectation, early founding of operations is negatively correlated with undertaking manufacturing ($r = -.26$, $n= 54$) and R&D ($r = -.09$, $n=54$) in Japan, which indicates that firms involved in manufacturing and R&D are not likely to transfer those activities to their operations in Japan (see Table 10.6).

Table 10.6

Pearson correlations for founding of firms in U.S., abroad and in Japan
and for undertaking manufacturing and R&D in Japan

(Number of Responding Firms = 55)

	Year went overseas	Year started in Japan	Conducts R&D in Japan	Has manufacturing in Japan
Year parent firm founded in U.S.	0.81 (50)	0.46 (52)	-0.167 (52)	-0.29 52
Year parent firm first went overseas		0.47 (50)	-0.01 (50)	-0.17 (50)
Year parent firm first began operations in Japan			-0.09 (54)	-0.26 (54)
Subsidiaries that undertake R&D				0.31 (55)

Strategic role of the American manufacturing subsidiary in Japan. All the top management of the 48 firms responding to this question perceive gaining market share in Japan to be a strategic role expected by the American parent of the

subsidiary. Subsequent interviews on gaining market share in Japan indicated that these firms see a need to compete with the Japanese in their home market in order to better compete with Japanese competitors in America and other world markets. As shown in Table 10.7, three quarters or more of the firms in this sample regard the following to be additional goals expected of them by their American parent firms: 1) financial profitability in their own right, 2) development of products for sale in Japan, and 3) and serving as a listening post on the Japanese market. Follow-up interviews indicated that top management of these subsidiaries feel they were expected to stand on their own. In addition, they perceive that being in Japan allows them to: 1) develop better customer relationships in order to better assess and address their needs, and 2) better keep on top of what the competition is up to. Finally, fewer than half of the 44 respondents to this question perceive their role to be to develop products for worldwide application. Discussion with one subsidiary head indicates that R&D for most firms is done primarily in the U.S. which is supported in this survey by the fact that only 35% of the 55 manufacturers in this sample have R&D departments in Japan. Further, he perceived that these R&D departments usually are specialized in only one or two product lines in contrast to many product lines back in the U.S. Correlation matrices further show correlations between firms perceiving expectations of profitability and increased market share in Japan ($r=.31$, $n=53$). In addition, perceived expectations of subsidiaries to develop products for sale in Japan and for global application, and to act as a listening post are also highly correlated (perceived expectations of subsidiaries to develop products for sale in Japan and for global application ($r=.73$, $n=55$); perceived expectations of subsidiaries to develop products for sale in Japan and to act as a listening post ($r=.84$, $n=55$), expectations of subsidiaries to develop products for global application and to act as a listening post ($r=.56$, $n=55$)).

Table 10.7
Perceived strategic roles of American manufacturing subsidiaries in Japan

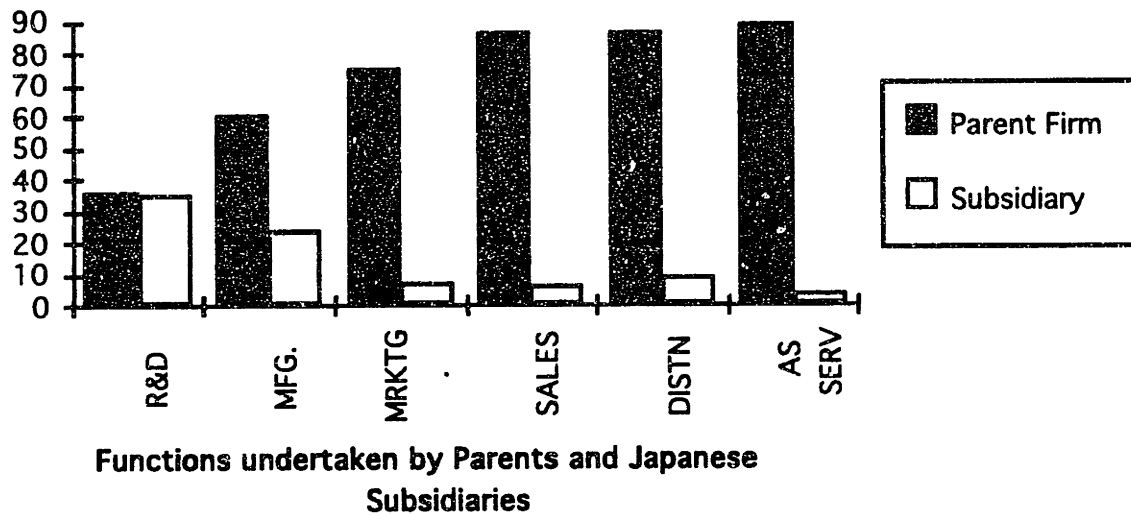
Percentage of American Manufacturing Subsidiaries in Japan Perceiving each of the Following to be the Strategic Role Expected of them by their American Parent:		
<u>Responding to this Question</u>		
Gain market share in Japan	100%	(n=48)
Be financially profitable in your own right	85%	(n=46)
Develop Products for sale in Japan	86%	(n=44)
Develop Products for Worldwide Application	45%	(n=44)
Serve as a Listening Post on Japan	75%	(n=45)

Functional organization of Japanese operations. As expected, when one compares the value-added chains of manufacturing subsidiaries in Japan to their parent operations in America, more firms appear to undertake marketing, sales, distribution, and after sales service in their American operations than they do in their Japanese operations. However, similar numbers of firms appear to undertake both R&D and manufacturing in both their American and Japanese operations (Table 10.8). Interestingly, percentage of American equity (or lack thereof) is slightly negatively correlated with the subsidiary's undertaking R&D in Japan ($r=-.23$, $n=55$) and manufacturing in Japan ($r=-.31$, $n=55$), indicating the possible trend of more R&D and manufacturing in subsidiaries where there is more Japanese investment.

Table 10.8

Percentages of parent and subsidiary firms undertaking R&D, manufacturing, marketing, sales, distribution, and after sales service functions

(Number of Responding Firms = 55)



As expected, undertaking marketing, sales, distribution, and after-sales service are all strongly intercorrelated (all $r > .6$, $n=55$) as shown in Table 10.9. Also, the parent firm's undertaking of R&D is slightly correlated with the subsidiary's undertaking sales in Japan ($r=.32$, $n=55$) and slightly negatively correlated with undertaking R&D in Japan ($r=-.39$, $n=55$), which indicates that firms that undertake R&D in the U.S. do not necessarily undertake R&D in Japan.

Table 10.9
 Pearson correlations for firm functions undertaken by parent and subsidiary firms
 (Number of Responding Firms = 55)

	1	2	3	4	5	6
<i>Subsidiary Functions</i>						
1. Subsidiary undertakes Sales in Japanese operations						
2. Subsidiary undertakes distribution in Japan	0.76					
3. Subsidiary undertakes after-service in Japanese operations	0.81	0.61				
4. Subsidiary undertakes marketing in Japan	0.86	0.64	0.70			
5. Subsidiary undertakes R&D in Japanese operations	-0.01	0.04	0.06	-0.06		
6. Subsidiary undertakes manufacturing in Japan	-0.13	-0.03	-0.11	-0.15	0.31	
<i>Parent Functions</i>						
7. Parent undertakes sales in American operations	0.10	-0.05	0.08	0.11	-0.13	-0.01
8. Parent undertakes distribution in American operations	0.10	0.13	0.08	0.11	-0.13	-0.01
9. Parent undertakes after-service in America	0.09	-0.07	0.07	0.11	-0.18	-0.04
10. Parent undertakes marketing in America	0.14	0.04	0.11	0.00	-0.19	-0.07
11. Parent undertakes R&D in America	0.32	0.29	0.26	0.22	-0.39	-0.33
12. Parent undertakes manufacturing in America	0.03	0.00	-0.04	-0.06	-0.19	-0.42

Market orientation of Japanese subsidiaries. Japan is the primary market for 82% of the 55 American subsidiaries in Japan sampled here, which is not surprising since Japan is the second largest country market in the world. Only 6% of the subsidiaries consider the U.S. or Asia to be their primary market. Further,

almost a quarter of the 55 firms in the sample say they manufactured products specifically for the Japanese market and that these products are sold only in Japan and not in the U.S. (Table 10.10). Close to three quarters of the 54 firms responding to this question report that they had to make some changes to their products before introducing them into the Japanese market.

Table 10.10

Proportion of products sold in Japan
that are manufactured by the American subsidiary in Japan
(Number of Firms Responding to this Question = 55)

Percentage Categories Products sold in Japan that are manufactured by American Subsidiary there	Frequency of Firms in that Category
0-9%	12
10-19%	9
20-49%	6
50-79%	10
80-100%	18

Demonstrating intra-firm product transfer across subsidiaries, close to half of the 54 firms responding to this question said they exported products to other subsidiaries. Yet, just as overall American investment in Japan pale in comparison to Japanese investment in America, individual American operations in Japan are also small. Even though Japan represents America's largest foreign customer market, over a third of the 45 firms responding to this question report that their sales contribute less than 20% of their firm's worldwide sales.

Employee count and composition. Employee count for individual subsidiary operations was obtained from the Toyo Keizai Foreign Capital Firm

Guide (1991).¹⁵¹ The total employee count for each of the Japanese subsidiaries in this sample ranges from 100 to 24,677, with an average of 1,193 employees (s.d. 3,565) for the 48 responding firms. The distribution of employment sizes is somewhat skewed toward smaller manufacturing operations. Half of the firms in the sample (23/48) employ 100-300 people, a fifth of the firms in the sample employ 1,000-3,700 people, and only one firm employs over 3,700 people with 24,677.

Over half the 55 firms sampled here report that 10-19% of the work force are at or above the lowest level of management (*Ka-cho* level), as shown in Table 10.10. Almost 90% of the 55 responding firms report that all of the managers are Japanese, the rest report that more than two thirds of the managers are Japanese¹⁵² (Table 10.12). Further, over two thirds of the 55 responding firms have Japanese general managers, and 95% of the 55 personnel departments responding are headed by Japanese personnel managers. In comparison to Japanese firms in America, the prevalence of Japanese in top management positions in American subsidiaries in Japan highlights an emphasis on local responsiveness in the area of personnel and a "hands off" approach to overseas subsidiaries taken by American multinationals.

¹⁵¹Employee count in the *Toyo Keizai Gaishikei Kigyō*, 1991 relied on Japanese government sources for these data.

¹⁵²For purposes of triangulation, the percent of foreign employees was measured in two ways. First foreign employee counts were taken from the *Toyo Keizai Gaishikei Kigyō*, 1991 where available (available for about 54% of the firms in this sample). In addition, firms were asked in this questionnaire to self-report the percentage of employees in management positions and the number of non-Japanese managers. Measuring the percentage of Non-Japanese "managers" rather than the percentage of Non-Japanese employees at all levels of the firm shifted the focus away from foreign factory workers to managers likely sent or hired by the parent firm, in keeping with this questionnaire's focus on parent-subsidiary relations and management track personnel practices. According to the data available in the *Toyo Keizai Foreign Capital Firm Guide (Toyo Keizai Gaishikei Kigyō, 1991)*, half of the responding subsidiaries (54% response rate) had fewer than 10 foreign employees, suggesting perhaps that the *Toyo Keizai Foreign Capital Firm Guide (Toyo Keizai Gaishikei Kigyō, 1991)* implicitly defined these foreign "employees" as "managers". Alternatively, low foreign employee counts despite the high rate of foreign factory workers in Japan might indicate that: 1) Foreign factory workers are not included in the employee count, perhaps as a result of their temporary status, or 2) American subsidiary operations in Japan do not include actual manufacturing which employs a large number of foreign workers in Japan, but focus largely on managers. Overall, however, the high rate of firms with few foreign employees would indicate that American firms in Japan generally leave their operations up to the Japanese.

Table 10.11

Percentage of work force that are *Ka-cho* level or above
in the American subsidiary in Japan

(Number of Firms Responding to this question = 55)

Percentage categories of work force that are <i>Ka-cho</i> level or above	Frequency of firms in that category
0-9%	6
10-19%	27
20-49%	16
50-79%	1
80-100%	1

Table 10.12

Percentage of non-Japanese managers in the subsidiaries in this sample

(Number of Firms Responding to this question = 32)

Percentage categories of non-Japanese managers	Frequency of firms in that category
0%	26
1-4%	1
5-9%	2
10-19%	1
20-32%	2
33+%	0

Overview of personnel practices.

In this survey, I began by asking subsidiary heads and subsidiary HRM heads to estimate the degree of emphasis placed on 40 recruiting, training, and performance appraisal practices in their own subsidiaries in Japan and in their American parent firms in America, using a 0-7 scale in which zero indicated that the practice is not used and 7 indicated very strong emphasis (see Table 10.13 below). To examine recruiting, I selected out eight of the 15 recruitment practices that met Nelson and Winter's definition of routine.

In the *American parent firms*, the average emphasis on these eight recruiting practices ranges from 2.58 to 5.60, with "parent use of HRM and line staff interviews" exhibiting the strongest perceived emphasis, and "recruitment from specific schools" exhibiting the least perceived emphasis *across the parent firms*. The low emphasis on selection from specific schools in America may be due to the large number of universities and their geographic diversity in the U.S. Or, it may be due to a certain egalitarianism in hiring perceived by these respondents.¹⁵³

With regard to the subsidiaries in Japan, the average degree of emphasis placed on various recruiting and selection practices or routines by the Japanese subsidiaries ranges from 2.04 to 5.94¹⁵⁴, with subsidiaries' "use of HRM and line staff interviews" exhibiting the strongest perceived emphasis and "recruitment from specific schools" again exhibiting the least perceived emphasis across the subsidiaries. The strong emphasis on HRM and line and staff interviews in the subsidiary may reflect the reality that when operating in a foreign market, the most effective means of gaining market or technical expertise is through quality local

¹⁵³ This well may be due to response bias as the respondents were subsidiary heads and not necessarily American. Stephen Carroll's forthcoming study may serve to cross validate this lack of emphasis on selection from certain schools in America by using data gathered from the same questions in American companies.

¹⁵⁴ This was on a 0-7 scale in which zero indicated that the practice is not used and 7 indicated very strong emphasis.

personnel. Further, with close to a third of the subsidiaries undertaking R&D in Japan, a critical element to their successful operation and growth is their people. Moreover, as many of the recruits are mid-career hires, the only way to accurately judge their experience is through interviewing. Thus, carefully interviewing recruits in both the personnel department and the department in which they will work is critically important to developing an organization able to compete successfully in Japan. At the other end of the range of emphasis, the low emphasis in Japan may be because foreign firms do not have as much prestige in Japan as their Japanese counterparts, and thus cannot afford to be all that selective in recruiting from only prestigious schools.

Table 10.13
 Perceived emphasis of recruiting practices in the parent sample
 (Sample Size = 55)

Recruiting practice's emphasis in the parent firms and subsidiaries	Total N of Firms	Mean	Standard Deviation
<i>American parent recruitment and selection practices emphasized</i>			
BA6. Use of interviews by HRM staff and managers	45	5.60	1.70
BA2. Use of recruitment from former or present employees of other companies	46	5.52	1.29
BA4. Use of objective skill ability tests	40	4.57	1.73
BA3. Use of recruitment from within (post job openings within company)	45	4.53	1.68
BA7. Use of references	45	4.33	1.52
BA1. Use of recruitment from schools	43	3.74	1.59
BA5. Use of personality tests	33	3.42	1.56
BA8. Recruitment from certain schools only	43	2.58	1.49

Table 10.14
 Perceived emphasis of recruiting practices in the subsidiary sample
 (Sample Size = 55)

Recruiting practice's emphasis in the parent firms and subsidiaries	Total N of Firms	Mean	Standard Deviation
<i>Subsidiary recruitment and selection practices emphasized</i>			
BJ6. Use of interviews by HRM staff and managers	54	5.94	1.33
BJ2. Use of recruitment from former or present employees of other companies	55	5.00	1.50
BJ5. Use of personality tests	45	4.97	2.10
BJ3. Use of recruitment from within (post job openings within company)	55	4.85	1.43
BJ1. Use of recruitment from schools	54	4.85	1.83
BJ4. Use of objective skill ability tests	49	4.46	1.80
BJ7. Use of references	47	3.57	1.70
BJ8. Recruitment from certain schools only	47	2.04	1.41

Performance appraisal. In the *American parent firms*, the average emphasis on performance appraisal practices ranges from 3.44 to 6.20 with the use of formal/structured systems of appraisal (CA1) exhibiting the strongest perceived emphasis, and the use of subjective judgment in performance appraisal (CA4) exhibiting the least perceived emphasis *across the parent firms*. In the subsidiaries in Japan, the average degree of emphasis placed on various performance appraisal practices by the Japanese subsidiaries ranges from 3.53 to 5.98, with the use of formal/structured systems of appraisal (CA1) exhibiting the strongest perceived

emphasis, and the use of subjective judgment in performance appraisal (CA4) exhibiting the least perceived emphasis across the subsidiaries as well as the parent firms.

As may be expected of the Japanese subsidiaries, slightly less emphasis is placed on average on the use of formal/structured systems of appraisal (CA1), and slightly more emphasis is placed on the use of subjective judgment in performance appraisal (CA4) than is the case in the parent firms on average.

Table 10.15
 Perceived emphasis of performance appraisal practices in the parent sample
 (Sample Size = 55)

Performance appraisal practice's emphasis in parent and subsidiary firms	Total N of Firms	Mean	Standard Deviation
<i>American parent performance appraisal practices emphasis</i>			
CA1. Use of formal/structured systems of appraisal	44	6.20	1.04
CA3. Use of numerical performance indicators	44	5.56	1.37
CA9. Use of performance standards	44	5.56	1.04
CA8. Use of management by objectives system	44	5.50	1.22
CA7. Use of multiple measures of performance	41	5.07	1.36
CA6. Use of long term (one year+) performance indicators	42	4.26	1.72
CA5. Use of self-assessment evaluations	41	4.21	1.44
CA10. Use of trait measurement system	41	3.75	1.44
CA2. Use of informal systems of appraisal	41	3.53	1.68
CA4. Use of subjective judgment in performance appraisal	43	3.44	1.65

Table 10.16
 Perceived emphasis of performance appraisal practices in the subsidiary sample
 (Sample Size = 55)

Performance appraisal practice's emphasis in parent and subsidiary firms	Total N of Firms	Mean	Standard Deviation
<i>Subsidiary performance appraisal practices emphasis</i>			
CJ1. Use of formal/structured systems of appraisal	55	5.98	1.01
CJ8. Use of management by objectives system	54	5.05	1.26
CJ7. Use of multiple measures of performance	51	5.01	1.20
CJ9. Use of performance standards	54	4.96	1.21
CJ6. Use of long term (one year+) performance indicators	52	4.94	1.41
CJ3. Use of numerical performance indicators	55	4.90	1.65
CJ5. Use of self-assessment evaluations	50	4.30	1.71
CJ2. Use of informal systems of appraisal	52	3.86	1.85
CJ10. Use of trait measurement system	51	3.56	1.40
CJ4. Use of subjective judgment in performance appraisal	54	3.53	1.72

Training. In the *American parent firms*, the average emphasis on training practices ranges from 3.20 to 5.51 with the use of technical knowledge training (FA6) exhibiting the strongest perceived emphasis, and the use of foreign language

training (FA9) exhibiting the least perceived emphasis *across the parent firms*. This is in keeping with expectations that American firms have traditionally placed very little emphasis on foreign language training and much more emphasis on technical skill acquisition.

Counter to expectation, American parents on average also place a high emphasis on in-house training (mean= 5.36). With regard to the subsidiaries in Japan, the average degree of emphasis placed on various training practices by the Japanese subsidiaries ranges from 3.98 to 5.84, with the use of entry level training (FJ11) and informal coaching (FJ2) exhibiting the strongest perceived emphasis and the use of international training for expatriate managers (FJ12) exhibiting the least perceived emphasis across the subsidiaries. This high emphasis on entry level training may reflect a desire by American firms in Japan to emulate their Japanese competition which place a very strong emphasis on entry level training.

Table 10.17
 Perceived Emphasis of Training Practices in the parent sample
 (Sample Size = 55)

Training practice emphasis in parent and subsidiary firms	Total N of Firms	Mean	Standard Deviation
<i>American parent training practice emphasis</i>			
FA6. Use of technical knowledge training	43	5.51	0.98
FA1. Use of in-house classroom training	44	5.36	1.35
FA7. Use of general problem solving training	41	5.29	1.10
FA2. Use of informal coaching by supervisors	42	5.00	1.50
FA3. Use of outside (external) classroom training	43	4.77	1.32
FA4. Use of individual development plans	40	4.65	1.25
FA8. Use of interpersonal skills training	40	4.55	1.28
FA5. Use of creativity enhancement training	40	4.47	1.36
FA11. Use of entry level training for employees	39	4.08	1.71
FA12. Use of international training for expatriates	41	4.08	1.45
FA10. Use of formal mentoring programs	36	3.75	1.73
FA9. Use of foreign language training	39	3.21	1.54

Table 10.18
 Perceived Emphasis of Training Practices in the subsidiary sample
 (Sample Size = 55)

Training practice emphasis in parent and subsidiary firms	Total N of Firms	Mean	Standard Deviation
<i>Subsidiary training practices emphasis</i>			
FJ11. Use of entry level training for employees	53	5.85	1.39
FJ2. Use of informal coaching by supervisors	54	5.57	1.19
FJ6. Use of technical knowledge training	54	5.44	1.02
FJ1. Use of in-house classroom training	54	5.42	1.42
FJ9. Use of foreign language training	55	5.24	1.53
FJ7. Use of general problem solving training	52	4.92	1.23
FJ10. Use of formal mentoring programs	49	4.86	1.49
FJ8. Use of interpersonal skills training	52	4.56	1.35
FJ3. Use of outside (external) classroom training	54	4.37	1.20
FJ5. Use of creativity enhancement training	51	4.16	1.27
FJ4. Use of individual development plans	51	4.12	1.18
FJ12. Use of international training for expatriates	50	3.98	1.71

**Chapter 11:
Operationalizing parental control through the use of composited
isomorphic pressure indicators.**

In this chapter, I set out to operationalize the pressures toward mandated isomorphism in terms of the varieties of parental control over the subsidiary outlined in the earlier chapter on the MNE in the context of isomorphic pressure: A) control of the subsidiary by the parent through task and structural interdependence, B) control through financial resource allocation related to budgeting and ownership, C) control through policy, D) control through goal setting, E) socialization of subsidiary managers (a hybrid of normative isomorphic pressure), and F) control through example and communication. To composite several isomorphic pressure variables into single variables representing control through budgeting, control through task and structural independence, goal setting, socialization and communication, I group indicators using two criteria: 1) theoretical coherence, and 2) statistical coherence. With regard to statistical coherence, since the original variables do not exhibit homogeneous sample variances and thus can not be combined in an unweighted index, I employ principal components analysis (Affifi & Clark, 1984). Criteria for statistical coherence are that variables forming a composite : 1) be highly intercorrelated with each other, and 2) exhibit the highest eigenvectors (indicating similar direction and strength of correlation).¹⁵⁵ Thus, this chapter proceeds through each group of isomorphic pressure variables, first laying out the criteria for theoretical coherence and then addressing the above criteria for statistical coherence.

¹⁵⁵The criterion used here for interpreting the magnitude of the principal component coefficients or eigenvectors is the criterion set forth in the Cyril Burt assertion that the eigenvectors are large if the magnitude of the eigenvector $>.3/\text{square root of the eigenvalue}$, where the square root of the eigenvalue is the standard deviation of the composite, and thus "large" is significantly different from zero (Affifi and Clark 1984: 316).

Control through task and structural interdependence.

To operationalize parental control of the subsidiary through task and structural integration, I created a composite made up of several isomorphic pressure indicators.¹⁵⁶ I grouped indicators using two criteria: 1) theoretical coherence, and 2) statistical coherence. With regard to statistical coherence, since the original variables did not exhibit homogeneous sample variances and thus could not be combined in an unweighted index, I employed principal components analysis (Affifi & Clark, 1984). Criteria for statistical coherence are that variables forming a composite : 1) be highly intercorrelated with each other, and 2) exhibit the highest eigenvectors (indicating similar direction and strength of correlation).¹⁵⁷

The tasks I focused on are activities which represent Porter's (1984, 1986) value chain of firm activity: R&D, manufacturing, marketing, sales, distribution, after-sales service. I asked subsidiary heads to check those activities undertaken in the Japanese subsidiary and then those undertaken by the headquarters in the U.S.¹⁵⁸ I then created scores ranging from 1 to -1 to represent the parent firm's independence of or dependence on the subsidiary.¹⁵⁹

¹⁵⁶Elsewhere in the thesis, I create composites to represent: , 1) control through financial resource allocation related to budgeting and ownership, 2) control through policy, 3) control through goal setting, 4) socialization of subsidiary managers (a hybrid of normative isomorphic pressure), and 5) control through example and communication (mimetic isomorphic pressure).

¹⁵⁷The criterion used here for interpreting the magnitude of the principal component coefficients or eigenvectors is the criterion set forth in the Cyril Burt assertion that the eigenvectors are large if the magnitude of the eigenvector $>.3/\text{square root of the eigenvalue}$, where the square root of the eigenvalue is the standard deviation of the composite, and , control through budgeting and ownership, goal setting, socialization and communication. thus 'large' is significantly different from zero (Affifi and Clark 1984: 316).

¹⁵⁸I also asked them to check those activities undertaken by their parent firm in Asia and Europe as well.

¹⁵⁹If the operation was undertaken in a given location, it was coded with a one, if not, it was coded with a zero. I then subtracted the subsidiary score from the parent score for each activity to create a task interdependence variable with the possible values of one, zero, or -1, where the parent has more control over the activity when it undertakes the activity and the subsidiary does not, and it has the least control over the activity when the subsidiary undertakes the task and the parent does not. If the parent undertakes R&D, for example, and the subsidiary does not, the parent's independence score is a one for the R&D activity. If both the parent and the subsidiary take on certain functions such as

I operationalized task and structural interdependence using the following questions as indicators of parental interdependence with the subsidiary:

(P) Where are the following functions undertaken?

	Headquarters in the U.S.	Subsidiary in Japan
P1. Sales	PU1	PJ1
P2. Distribution	PU2	PJ2
P3. After-Sales Service	PU3	PJ3
P4. Marketing	PU4	PJ4
P5. R&D	PU5	PJ5
P6. Manufacturing	PU6	PJ6
P7. HRM	PU7	PJ7

I supplemented these functional interdependence indicators by examining the flow of goods across borders (see Gupta and Govindarajan, 1990). To capture the flow of products underlying task interdependence, I approached these flows from two angles: 1) the direction of the flow in terms of end markets, and 2) the volume of the flow, in terms of sales and production volume.

I operationalized flows of products using the following questions as indicators of parental interdependence with the subsidiary:

(H) Please estimate the following about the American subsidiary/ joint venture in Japan.

H1R.160 Percentage of total worldwide company sales
from your Japanese operations: A. 0-19% B. 20-39%
C. 40-59% D. 60-79% E. 80-100%

R&D, or both of them do not, the parent's dependence score is a zero. If the subsidiary undertakes the function and the parent does not, its score is a negative one.

160 *Variable labels followed by an R indicate that these variables were recoded to reverse the direction. I presented pre-coded categories, because my pilot test indicated that this would increase my response rate.

H2R.* Approximately what proportion of products sold in Japan are manufactured in Japan? A. 0-19% B. 20-39%
C. 40-59% D. 60-79% E. 80-100%

N3R.* Does your subsidiary export products from Japan to other parts of the firm? ___Yes; ___No.

N11R.* Do you manufacture or develop any products for the Japanese market which you do not sell in America? ___Yes;___No.

N15R.* To which market does your subsidiary sell primarily?
___Japan; ___U.S.; ___Asia; ___Other.

I also examined the focus of tasks such as product development. Product development solely for the Japanese market represents independence on the part of the subsidiary from the parent, while product development for worldwide applications represent the parent's interdependence or dependence on the subsidiary.

I operationalized task focus using the following questions as indicators of parental interdependence with the subsidiary:

With regard to the strategic role of your subsidiary/joint venture, does your American parent expect you to:

Astrat 3R.* Develop products for sale in Japan?
___Yes;___No.

Astrat 4R.* Develop products for worldwide application?
___Yes;___No.

The Pearson correlation coefficients for the two-way correlations of all the above variables comprising the task and structural interdependence composite are provided below. Intercorrelations among the following isomorphic pressures appear to be somewhat strongly correlated, with all intercorrelations above .3:

H2R.* Proportion of products sold in Japan that are manufactured in Japan.

N3R.* Exporting products from Japan to other parts of the firm.

N11R.* Manufacturing or developing products for the Japanese market which not sold in America.

(P) Where the following functions are undertaken.

	Headquarters in the U.S.	Subsidiary in Japan
P1. Sales	PU1	PJ1
P2. Distribution	PU2	PJ2
P3. After-Sales Service	PU3	PJ3
P4. Marketing	PU4	PJ4
P5. R&D	PU5	PJ5
P6. Manufacturing	PU6	PJ6
P7. HRM	PU7	PJ7

Table 11.1a
Pearson product moment correlations
Indicators of control through task and structural interdependence

	ASTRAT3	ASTRAT4	H1R	H2R	N3R	N11	N15R
ASTRAT3	1.00	-0.25	-0.21	0.07	-0.19	0.19	-0.11
ASTRAT4	-0.25	1.00	0.12	0.20	0.17	-0.24	-0.29
H1R	-0.21	0.12	1.00	0.21	0.42	-0.05	0.02
H2R	0.07	0.20	0.21	1.00	0.43	-0.32	0.00
N3R	-0.19	0.17	0.42	0.43	1.00	-0.21	0.03
N11	0.19	-0.24	-0.05	-0.32	-0.21	1.00	-0.15
N15R	-0.11	-0.29	0.02	0.00	0.03	-0.15	1.00
DIFPUJ1	-0.19	-0.13	0.04	0.35	0.44	-0.39	0.49
DIFPUJ2	0.20	-0.28	-0.12	0.34	0.28	-0.27	0.41
DIFPUJ3	-0.19	-0.13	0.04	0.35	0.44	-0.39	0.49
DIFPUJ4	-0.21	0.15	0.08	0.38	0.19	-0.45	0.26
DIFPUJ5	0.10	0.24	0.04	0.44	0.45	-0.19	-0.22
DIFPUJ6	0.28	-0.01	0.15	0.56	0.26	-0.22	-0.24
DIFPUJ7	-0.14	0.24	0.05	0.40	0.35	-0.33	-0.15

Table 11.1b
 Pearson product moment correlations
 Indicators of control through task and structural interdependence

	DIFPUJ1	DIFPUJ2	DIFPUJ3	DIFPUJ4	DIFPUJ5	DIFPUJ6	DIFPUJ7
ASTRAT3	-0.19	0.20	-0.19	-0.21	0.10	0.28	-0.14
ASTRT4R	-0.13	-0.28	-0.13	0.15	0.24	-0.01	0.24
H1R	0.04	-0.12	0.04	0.08	0.04	0.15	0.05
H2R	0.35	0.34	0.35	0.38	0.44	0.56	0.40
N3R	0.44	0.28	0.44	0.19	0.45	0.26	0.35
N11	-0.39	-0.27	-0.39	-0.45	-0.19	-0.22	-0.33
N15R	0.49	0.41	0.49	0.26	-0.22	-0.24	-0.15
DIFPUJ1	1.00	0.84	1.00	0.53	0.11	0.10	0.56
DIFPUJ2	0.84	1.00	0.84	0.37	0.17	0.24	0.43
DIFPUJ3	1.00	0.84	1.00	0.53	0.11	0.10	0.56
DIFPUJ4	0.53	0.37	0.53	1.00	0.25	0.15	0.45
DIFPUJ5	0.11	0.17	0.11	0.25	1.00	0.57	0.19
DIFPUJ6	0.10	0.24	0.10	0.15	0.57	1.00	0.22
DIFPUJ7	0.56	0.43	0.56	0.45	0.19	0.22	1.00

Using only variables with intercorrelations of .3 or greater, I developed a composite using principal components analysis. The composite with the largest eigenvalue below explains 46% of the variance explained by the original variables. It also has the highest internal consistency as verified by a Cronbach's Alpha, suggesting that it best represents the above isomorphic pressure indicators. Examining the eigenvectors comprising the largest composite, I excluded variables whose eigenvectors for the largest principal component did not meet the minimum criteria for small eigenvectors ($.3/\text{square root of the eigenvalue of the largest composite}$). The eigenvectors for the final composite are all large, suggesting that

these variables comprise the final composite. The variables and their eigenvectors comprising the final composite are listed below.

Table 11.2
Final composite
Eigenvalues for principal components
Control through task and structural interdependence

COMPOSITE	Eigenvalue "PC"	Proportion of Iso. Variables Variance Explained by Composite
Task Composite 41	4.42	0.44
Task Composite 42	1.67	0.17
Task Composite 43	1.03	0.10

Table 11.3
Final composite Eigenvectors
for parental control through task and structural interdependence

Eigenvectors	Task Composite 41
<i>Interdependence of parent and subsidiary tasks (P1-P5)</i>	
P3. After-Sales Service	0.40
P1. Sales	0.39
P2. Distribution	0.35
P4. Marketing	0.35
H2. Proportion of products sold in Japan that are manufactured in Japan	0.31
P7. HRM Activities	0.30
N3R. Exporting products from Japan to other parts of the firm	0.29
P6. Manufacturing	0.24
P5. R&D	0.16
N11R. Manufacturing or developing products for the Japanese market not for sale in America	0.30

Thus, the variables making up the final composite representing control through task and structural interdependence are:

H2R.* Proportion of products sold in Japan that are manufactured in Japan.

N3R.* Exporting products from Japan to other parts of the firm.

N11R.* Manufacturing or developing products for the Japanese market which not sold in America.

(P) Where are the following functions are undertaken.

	Headquarters in the U.S.	Subsidiary in Japan
P1. Sales	PU1	PJ1
P2. Distribution	PU2	PJ2
P3. After-Sales Service	PU3	PJ3
P4. Marketing	PU4	PJ4
P5. R&D	PU5	PJ5
P6. Manufacturing	PU6	PJ6
P7. HRM	PU7	PJ7

Control through budgeting and ownership.

Stopford and Wells (1972: Chapter 7 and 8) suggest that wholly owned subsidiaries afford the parent firm more control over the subsidiary's production and management of the products. Certain strategies that demand tight controls are often associated with strong preferences for wholly-owned subsidiaries. I selected the percentage equity held by the American parent in the subsidiary to represent the parent firm's control by ownership, and posited that the higher the parent equity holding, the more legitimacy the parent perceives that it has in exerting control over the subsidiary.

Similarly, budgeting as a control mechanism has occupied a central place in the accounting and control literature (Hopwood 1972, Otley 1978). Budgeting offers a means of control by limiting the subsidiary's autonomy through limited discretionary

funding. To represent the parent's control over the subsidiary's financial resource allocation systems, I selected items representing the parent firm's control over the subsidiary's general and HRM budgeting.

To counter parental control and represent the subsidiary's financial autonomy from the parent, I focused on the subsidiary's financial contribution to the overall MNE and the parent firm's expectation that the subsidiary be financially profitable in its own right, as well as its ability to meet parent goals in terms of return on investment and contribution to consolidated profits relative to other subsidiaries in the MNE.

I initially operationalized control through budgeting and ownership using the following questions as indicators of parental control:

AMINVEST. American parent company's equity holding in the subsidiary

With regard to the strategic role of your subsidiary, does your American parent expect you to:

Astrat 2. Be financially profitable in your own right?

Yes; No.

(H) Please estimate the following about the American subsidiary/ joint venture in Japan.

H1R. Percentage of total worldwide company sales

from your Japanese operations: A. 0-9% B. 10-19% C. 20-49%
D. 50-79% E. 80-100%

J11. Amount of American parent control over Japanese subsidiary's total budgeting

J12. Amount of American parent control over Japanese subsidiary's HRM budget

J13. Amount of budget control your American parent firm typically has over its foreign subsidiaries

N14R. Subsidiary employee headcount controlled by:

Parent; Subsidiary; Jointly.

Parent sets targets for the subsidiary in the following areas:

QS4. Return on investment

QS5. Contribution to consolidated profits.

The Pearson correlation coefficients for the two-way correlations of the variables comprising control through budgeting and policy are provided below. Intercorrelations among the following isomorphic pressures appeared to be somewhat strongly correlated, with intercorrelations being all above .3:

J) Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your American parent company's, "HQ" (headquarters') characteristics.

- J11. Amount of American parent control over Japanese subsidiary's total budgeting
- J12. Amount of American parent control over Japanese subsidiary's HRM budget
- J13. Amount of budget control your American parent firm typically has over its foreign subsidiaries

H1R. Percentage of total worldwide company sales from your Japanese operations: A. 0-9% B. 10-19% C. 20-49%
D. 50-79% E. 80-100%

AMINVEST. Percentage American equity in the subsidiary

N14R. Subsidiary employee headcount controlled by:
 ___Parent; ___Subsidiary; ___Jointly.

Parent sets targets for Japanese subsidiary in the area of:

- QS4. return on investment
- QS5. contribution to consolidated Profits

Table 11.4
 Pearson product moment correlations
 Indicators of control through financial resources

	H1R	J11	J12	J13	N14R	ASTRAT2	AM. INVEST	QS5
H1R	1.00	0.37	0.21	0.36	-.03	-.01	0.38	-.02
J11	.37	1.00	0.61	0.73	0.24	-.07	0.43	0.40
J12	.21	0.61	1.00	0.47	0.09	-.12	0.24	0.35
J13	.36	0.73	0.47	1.00	0.30	-.26	0.22	0.17
N14R	-.03	0.24	0.09	0.30	1.00	-.03	0.05	0.18
ASTRA T2	-.01	-.07	-.12	-.26	-.03	1.00	-.03	0.29
AMINV EST	.38	0.43	0.24	0.22	0.05	-.03	1.00	0.37
QS4	-.02	0.40	0.35	0.17	0.18	0.29	0.37	1.00
QS5	-.27	0.34	0.31	0.12	0.20	0.19	0.13	0.66

Using only variables with intercorrelations of .3 or greater, I developed a composite using principal components analysis. The composite with the largest eigenvalue below explains 39% of the variance explained by the original variables. It also has the highest internal consistency, as verified by a Cronbach's Alpha, suggesting that it best represents the above isomorphic pressure indicators. Examining the eigenvectors comprising the largest composite, I excluded variables whose eigenvectors for the largest principal component did not meet the minimum criterion for small eigenvectors ($.3/\text{square root of the eigenvalue of the largest composite}$). The eigenvectors for the final composite are all large, suggesting that these variables comprise the final composite. The variables and their eigenvectors comprising the final composite are listed below.

Table 11.5
Final Composite
Eigenvalues for principal components
Control through financial resources

COMPOSITE	Eigenvalue "PC"	Proportion of Iso. Variables Variance Explained by Composite
BUDG41	3.10	0.39
BUDG42	1.64	0.20
BUDG43	1.07	0.13

Table 11.6
Final composite Eigen Vectors
for parental control through financial resource allocation
as perceived by subsidiary heads

Eigenvectors	Budgeting composite
J11. Amount of American Parent Control over Japanese subsidiary's total budgeting	0.50
J13. Amount of budget control your American Parent firm typically has over its foreign subsidiaries	0.41
J12. Amount of American Parent Control over Japanese subsidiary's HRM budget	0.41
Percentage American equity in the subsidiary	0.32
QS4. Parent sets goals for sub return on investment	0.36
QS5. Parent sets goals for sub contribution to consolidated profits	0.29
H1R. Percentage of total worldwide company sales from Japanese operations	0.21
N14R. Subsidiary employee headcount control	0.20

Thus, the variables comprising the final version of the financial resource allocation control composite are:

J) Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your American parent company's, "HQ" (headquarters') characteristics.

J11. Amount of American parent control over Japanese subsidiary's total budgeting

J12. Amount of American parent control over Japanese subsidiary's HRM budget

J13. Amount of budget control your American Parent firm typically has over its foreign subsidiaries

N14R. Subsidiary employee headcount controlled by:

___Parent; ___Subsidiary; ___Jointly.

Parent sets targets for the subsidiary in the following areas:

QS4. Return on investment

QS5. Contribution to consolidated profits

H1R. Percentage of total worldwide company sales

from your Japanese operations: A. 0-9% B. 10-19% C. 20-49%
D. 50-79% E. 80-100%

AMINVEST. Percentage American equity in the subsidiary.

Control through corporate policy.

Parent firms may attempt to control behavior of their subsidiaries indirectly by relying upon procedures and records as methods for limiting discretion (exception reporting is an example) and for monitoring activities.¹⁶¹ Within limits imposed by such indirect controls, decisions can be delegated to lower levels in the hierarchy, and to employees in specialized roles, some of whom are concerned with operating the indirect control system itself. I have operationalized policy control here as the desire for control over subsidiary HRM policy and the actual control over both subsidiary general management policy and HRM policy, because I argue that the firm must want

¹⁶¹Child refers to this as the bureaucratic strategy of control (Child 1973:3).

control as well exert it (consciously or unconsciously) to bring about conformity of practices.

I initially operationalized control by ends using the following questions as indicators of parental control:

J) Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your American parent company's, "HQ" (headquarters') characteristics.

J8. Company's desire for consistency among HRM/Personnel practices worldwide

J9. Amount of American Parent control over Japanese subsidiary's general management policies

J10. Amount of American Parent control over Japanese subsidiary's Personnel policies and practices

The Pearson correlation coefficients for the two-way correlations of the control through goal setting variables are provided below. Intercorrelations among the following isomorphic pressures appeared to be somewhat strongly correlated, with intercorrelations being all above .3:

J) Please indicate on the following 1 to 7 scale, with 1 indicating LOW and 7 indicating HIGH the following information about your American parent company's "HQ" (headquarters') characteristics.

J8. Company's desire for consistency among personnel practices worldwide

J9. Amount of American parent control over Japanese subsidiary's general management policies

J10. Amount of American parent control over Japanese subsidiary's Personnel policies and practices.

Table 11.7
Pearson product moment correlations
Indicators of control through policy

	J8	J9	J10
J8. Company's desire for consistency among HRM/Personnel practices worldwide	1.00	0.30	0.42
J9. Amount of American parent control over Japanese subsidiary's general management policies	0.30	1.00	0.72
J10. Amount of American parent control over Japanese subsidiary's Personnel policies and practices	0.42	0.72	1.00

The Pearson correlation coefficients for the two-way correlations of the control through goal setting variables are provided below. Intercorrelations among the following isomorphic practices appeared to be somewhat strongly correlated, with intercorrelations among themselves all above .3:

J) Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your American parent company's, "HQ" (headquarters') characteristics.

J8. Company's desire for consistency among personnel practices worldwide

J9. Amount of American parent control over Japanese subsidiary's general management policies

J10. Amount of American parent control over Japanese subsidiary's personnel policies and practices

Using only variables with intercorrelations of .3 or greater, I developed a composite using principal components analysis. The composite with the largest eigenvalue below explains 66% of the variance explained by the original variables. It also has the highest internal consistency as verified by a Cronbach's Alpha, suggesting that it best represents the above isomorphic pressure indicators.

Examining the eigenvectors comprising the largest composite, I excluded variables whose eigenvectors for the largest principal component did not meet the minimum criterion for small eigenvectors ($.3/\text{square root of the eigenvalue of the largest composite}$). The eigenvectors for the final composite are all large, suggesting that these variables comprise the final composite. The variables and their eigenvectors comprising the final composite are listed below.

Table 11.8
Final composite
Eigenvalues for principal components
Control through policy

COMPOSITE	Eigenvalue "PC"	Proportion of Iso. Variables Variance Explained by Composite
RULES41	1.98	0.66
RULES42	0.75	0.25
RULES43	0.26	0.09

Table 11.9
Final composite eigenvectors
for parental control through policy
as perceived by subsidiary heads

Eigenvectors	Policy Composite
J8. Company's desire for consistency among HRM/Personnel practices worldwide	.46
J9. Amount of American parent control over Japanese subsidiary's general management policies	.61
J10. Amount of American parent control over Japanese subsidiary's personnel policies and practices	.64

Thus, the variables comprising the final version of the budgeting and policy composite are:

- J8. Company's desire for consistency among HRM/Personnel practices worldwide
- J9. Amount of American parent control over Japanese subsidiary's general management policies
- J10. Amount of American parent control over Japanese subsidiary's personnel policies and practices

Control through goal setting.

Targeting or goal setting provides an alternative to attempting to program and regulate closely the work of all participants or requiring that all decisions be made above the level of the performers (Scott 1987: 217). In this way, organizations confronting increased complexity and uncertainty can delegate some autonomy to workers. These performance goals or end results include subsidiary performance measures such as: sales growth rate, market share, operating profits, return on

investment, the subsidiary's contribution to the MNE's consolidated profits and to the MNE's overall strategic positioning, cost reduction, and new product development. They also include personnel-related performance measures such as: job satisfaction of employees, turnover rate of employees, absenteeism rate of employees, employee development.

I initially operationalized control by ends using the following questions as indicators of parental control:

With regard to the strategic role of your subsidiary, does your American parent expect you to:

Astrat 1. Gain market share in Japan?

Yes; No.

Astrat 2. Be financially profitable in your own right?

Yes; No.

Astrat 4. Develop Products for worldwide application?

Yes; No.

Astrat 5. Serve as a Listening Post on: Japan? Yes; No.

Please check those performance measures for which the American parent firm sets clear targets or specific goals for the subsidiary.

Q1. Sales growth rate

Q2. Market share

Q3. Operating profits

Q4. Return on investment

Q5. Contribution to consolidated profits

Q6. Contribution to overall strategic positioning

Q7. Market development

Q8. Cost reduction

Q9. New product development

Q10. Job satisfaction of employees

Q11. Turnover rate of employees

Q12. Absenteeism rate of employees

Q13. Employee development

The Pearson correlation coefficients for the two-way correlations of the control through goal setting variables are provided below. Intercorrelations among the following isomorphic practices appeared to be somewhat strongly correlated, with all intercorrelations above .3:

Please check those performance measures for which the American parent firm sets clear targets or specific goals for the subsidiary.

- Q1. Sales growth rate
- Q2. Market share
- Q3. Operating profits
- Q4. Return on investment
- Q5. Contribution to consolidated profits
- Q6. Contribution to overall strategic positioning
- Q7. Market development
- Q8. Cost reduction
- Q9. New product development
- Q10. Job satisfaction of employees
- Q11. Turnover rate of employees
- Q12. Absenteeism rate of employees
- Q13. Employee development

Table 11.10
 Pearson product moment correlations
 Indicators of control through goal setting

	QC1	QC2	QC3	QC4	QC5	QC6	QC7	QC8	QC9
QC1	1.00	0.65	0.79	0.59	0.54	0.43	0.46	0.49	0.36
QC2	0.65	1.00	0.62	0.47	0.39	0.53	0.56	0.50	0.36
QC3	0.79	0.62	1.00	0.64	0.52	0.41	0.44	0.47	0.44
QC4	0.59	0.47	0.64	1.00	0.40	0.46	0.39	0.53	0.50
QC5	0.54	0.39	0.52	0.40	1.00	0.67	0.50	0.67	0.50
QC6	0.43	0.53	0.41	0.46	0.67	1.00	0.68	0.50	0.54
QC7	0.46	0.56	0.44	0.39	0.50	0.68	1.00	0.58	0.62
QC8	0.49	0.50	0.47	0.53	0.67	0.50	0.58	1.00	0.58
QC9	0.36	0.36	0.44	0.50	0.50	0.54	0.62	0.58	1.00
QC10	0.27	0.33	0.26	0.29	-0.01	0.05	0.03	0.20	0.03
QC11	0.19	0.23	0.18	0.20	0.11	0.17	0.15	0.14	0.15
QC12	0.23	0.28	0.22	0.25	0.23	0.32	0.08	0.27	0.29
QC13	0.19	0.23	0.18	0.20	0.34	0.17	0.41	0.38	0.41
ASTRT1	-0.13	-0.16	-0.13	-0.14	-0.24	-0.30	0.07	-0.27	-0.29
ASTRT2	-0.11	-0.21	0.02	0.06	0.05	-0.18	-0.15	0.13	-0.02
ASTRT4	0.14	0.11	0.09	-0.02	0.10	0.13	0.17	0.11	-0.03
ASTRT5	0.20	-0.04	-0.06	0.20	0.00	0.03	-0.01	-0.04	-0.01

Table 11.10
 Pearson product moment correlations
 Indicators of control through goal setting

	QC10	QC11	QC12	QC13	ASTRT1	ASTR2	ASTRT4	ASTRT5
QC1	0.27	0.19	0.23	0.19	-0.13	-0.11	0.14	0.20
QC2	0.33	0.23	0.28	0.23	-0.16	-0.21	0.11	-0.04
QC3	0.26	0.18	0.22	0.18	-0.13	0.02	0.09	-0.06
QC4	0.29	0.20	0.25	0.20	-0.14	0.06	-0.02	0.20
QC5	-0.01	0.11	0.23	0.34	-0.24	0.05	0.10	0.00
QC6	0.05	0.17	0.32	0.17	-0.30	-0.18	0.13	0.03
QC7	0.03	0.15	0.08	0.41	0.07	-0.15	0.17	-0.01
QC8	0.20	0.14	0.27	0.38	-0.27	0.13	0.11	-0.04
QC9	0.03	0.15	0.29	0.41	-0.29	-0.02	-0.03	-0.01
QC10	1.00	0.69	0.55	0.32	0.04	-0.05	-0.02	-0.04
QC11	0.69	1.00	0.81	0.48	0.03	-0.17	-0.01	0.01
QC12	0.55	0.81	1.00	0.38	-0.57	-0.32	-0.10	0.02
QC13	0.32	0.48	0.38	1.00	0.03	0.10	0.19	-0.07
ASTRT1	0.04	0.03	-0.57	0.03	1.00	0.30	0.15	-0.01
ASTRT2	-0.05	-0.17	-0.32	0.10	0.30	1.00	0.19	0.01
ASTRT4	-0.02	-0.01	-0.10	0.19	0.15	0.19	1.00	-0.16
ASTRT5	-0.04	0.01	0.02	-0.07	-0.01	0.01	-0.16	1.00

Using only variables with intercorrelations of .3 or greater, I developed a composite using principal components analysis. The composite with the largest eigenvalue below explains 52% of the variance explained by the original variables. It also has the highest internal consistency as verified by a Cronbach's Alpha, suggesting that it best represents the above isomorphic pressure indicators. Examining the eigenvectors comprising the largest composite, I excluded variables whose eigenvectors for the largest principal component did not meet the minimum criteria for small eigenvectors ($.3/\text{square root of the eigenvalue of the largest}$

composite). The eigenvectors for the final composite are all large, suggesting that these variables comprise the final composite. The variables and their eigenvectors comprising the final composite are listed below.

Table 11.11
Final composite
Eigenvalues for principal components
Control through goal setting

COMPOSITE	Eigenvalue "PC"	Proportion of Iso. Variables Variance Explained by Composite
GOAL41	6.20	0.39
GOAL42	2.38	0.15
GOAL43	1.63	0.10

Table 11.12
Final composite Eigenvectors
for parental control through goal setting
as perceived by subsidiary heads

Eigenvectors	Composite for Goal Setting
<i>Performance measures for which the American parent firm sets clear targets or specific goals for the subsidiary.</i>	
Q8. Cost Reduction	0.31
Q6. Contribution to Overall Strategic Positioning	0.30
Q1. Sales Growth Rate	0.29
Q2. Market Share	0.29
Q3. Operating Profits	0.29
Q5. Contribution to Consolidated Profits	0.29
Q4. Return on Investment	0.28
Q7. Market Development	0.25
Q9. New Product Development	0.25
Q12. Absenteeism Rate of Employees	0.24
Q13. Employee Development	0.23
Q11. Turnover Rate of Employees	0.22
Q10. Job Satisfaction of Employees	0.20

Thus the variables comprising the final composite representing control through ends and goals are:

Please check those performance measures for which the American parent firm sets clear targets or specific goals for the subsidiary.

- Q1. Sales growth rate
- Q2. Market share
- Q3. Operating profits
- Q4. Return on investment
- Q5. Contribution to consolidated profits
- Q6. Contribution to overall strategic positioning
- Q7. Market development
- Q8. Cost reduction
- Q9. New product development
- Q10. Job satisfaction of employees
- Q11. Turnover rate of employees
- Q12. Absenteeism rate of employees
- Q13. Employee development.

Normative parental control: Corporate socialization of subsidiary managers and presence of expatriates.

Normative isomorphic pressures derive from the existence of beliefs and norms held by certain groups in the organizational field. They may arise through the presence of professional groups with similar training, modes of behavior, and conceptual and problem-solving tool kits. (Hiring MBAs from elite schools is an example (Merton 1957).) Subsequently, these norms are transmitted to the organization as these professionals seek to impose their own standards and values on the organization. Within a multi-unit organization, socialization can be viewed as a control strategy (Stinchcombe 1959, Hall 1968). As Edstrom and Galbraith (1977) and Ouchi (1979) argue, socialization of managers can be a powerful mechanism for building identification with and commitment to the organization. Edstrom and Galbraith (1977: 249) hypothesized that in the transfer of managers was an opportunity for socialization and verbal information network creation. Some of the key processes through which such socialization occurs are job rotation across units and management development programs involving participants from several units (Edstrom and Galbraith 1977). Gupta and Govinderajan (1991) define corporate socialization of subsidiary managers as the processes through which the subsidiary managers' values and norms become closely aligned with those of the parent corporation. Here, I examine corporate socialization in terms of the subsidiary head's or subsidiary HRM head's years of experience in the parent headquarters and in other subsidiaries. I also examined the tendency of American subsidiaries in Japan to promote HRM heads from within HRM as opposed to being rotated in from other departments.

Boyacigilar (1990: 359) noted that "placing U.S. nationals in managerial positions affords the MNE a flexible means of control without overburdening the

programs." Expatriates often act as "carriers" and help to transmit parent country organizational practices to the affiliate (Lincoln, McBride, and Hanada, 1986), while those subsidiaries comprised exclusively, or almost exclusively, of local employees might be expected to closely adopt local management practices. To the extent that the affiliate is comprised of expatriates, its management practices may tend to be more like those of the parent firm. Thus control by leadership here is operationalized in terms of the nationality of the subsidiary and HRM heads and the number of non-Japanese expatriate managers in the subsidiary.¹⁶²

I operationalized normative control using the following questions as indicators of parent firm socialization of subsidiary managers.

(H) Please estimate the following about the American subsidiary in Japan.

H4. Percentage of *Non-Japanese* expatriate managers currently working in Japanese subsidiary:

- A. 0% B. 1-4%
C. 5-9% D. 10-19% E. 20-32% F. 33%+

H. Years of experience subsidiary head had previously in:

H7. Parent company headquarters in America:

- A. None B. Less than 2 yrs.
C. 3-5 yrs D. 6-9 yrs E. 10+ yrs

H8. Other non-American subsidiaries:

- A. None B. Less than 2 yrs. C. 3-5 yrs
D. 6-9 yrs E. 10+ yrs

H. Years of experience HRM head had previously in:

H9. American parent HRM Unit:

- A. None B. Less than 2 yrs.
C. 3-5 yrs D. 6-9 yrs E. 10+ yrs

H10. American parent *outside of* HRM Unit :

- A. None B. Less than 2 yrs. C. 3-5 yrs
D. 6-9 yrs. E. 10+ yrs

¹⁶²Non-Japanese shop floor workers will be excluded as they are often Filipino or South-East Asian and thus do not have any special relationship to the American parent firm.

H11. Other non-American subsidiaries:

- A. None B. Less than 2 yrs.
C. 3-5 yrs D. 6-9 yrs E. 10+ yrs

N12R. Nationality of subsidiary head: _____ Japanese; _____ Non-Japanese.

N13R. Nationality of subsidiary HRM head:
_____ Japanese; _____ Non-Japanese.

(R) Please agree or disagree to the following statements on a scale of 1-7:

R21. Your subsidiary's HRM heads tend to spend most of their careers in HRM

R22. Your subsidiary's HRM heads tend to be rotated into the position

The Pearson correlation coefficients for the two-way correlations of the variables comprising the composite "socialization of parent firm and subsidiary managers" are provided below. Intercorrelations among the following isomorphic pressures appeared to be somewhat strongly correlated, with all intercorrelations above .3:

H7. Years of experience subsidiary head had previously in:

H7. Parent company headquarters in America:

- A. None B. Less than 2 yrs.
C. 3-5 yrs D. 6-9 yrs E. 10+ yrs

N12R. Nationality of subsidiary head:
_____ Japanese; _____ Non-Japanese.

(R) Please agree or disagree to the following statements on a scale of 1-7:

R21. Your subsidiary's HRM heads tend to spend most of their careers in HRM

R22. Your subsidiary's HRM heads tend to be rotated into the position.

Table 11.13
 Pearson product moment correlations
 Normative parental control indicators

	H4	H7	H8	H9	H10	H11	N12R	N13R	R21	R22
H4	1.00	0.18	-0.10	0.48	-0.01	0.04	0.20	0.30	0.19	-0.05
H7	0.18	1.00	0.05	0.17	0.00	-0.14	0.69	0.06	0.10	-0.01
H8	-0.10	0.05	1.00	0.01	0.22	0.31	0.31	0.02	0.15	-0.18
H9	0.48	0.17	0.01	1.00	0.18	0.04	0.11	0.72	0.19	0.20
H10	-0.01	0.00	0.22	0.18	1.00	0.15	0.01	0.12	0.02	0.11
H11	0.04	-.14	0.31	0.04	0.15	1.00	0.05	0.22	0.20	-0.08
N12	0.20	0.69	0.31	0.11	0.01	0.05	1.00	0.17	0.22	-0.12
N13	0.30	0.06	0.02	0.72	0.12	0.22	0.17	1.00	0.22	0.05
R21	0.19	0.10	0.15	0.19	0.02	0.20	0.22	0.22	1.00	-0.37
R22	-0.05	-.01	-0.18	0.20	0.11	-0.08	-.12	0.05	-0.37	1.00

Using only variables with intercorrelations of .3 or greater, I developed a composite using principal components analysis. The composite with the largest eigenvalue below explains 52% of the variance explained by the original variables. It also has the highest internal consistency, as verified by a Cronbach's Alpha, suggesting that it best represents the above isomorphic pressure indicators. Examining the eigenvectors comprising the largest composite, I excluded variables whose eigenvectors for the largest principal component did not meet the minimum criterion for small eigenvectors ($.3/\text{square root of the eigenvalue of the largest composite}$). The eigenvectors for the final composite are all large, suggesting that these variables comprise the final composite. The variables and their eigenvectors comprising the final composite are listed below.

Table 11.14
Final composite
Eigenvalues for principal components

COMPOSITE	Eigenvalue "PC"	Proportion of Iso. Variables Variance Explained by Composite
NORM41	3.10	0.39
NORM42	1.55	0.19
NORM43	1.11	0.14

Table 11.15
Final Composites
EigenVectors
Parental control through socialization of parent firm and subsidiary managers

Eigenvectors	Composite for normative pressures
R21. Your subsidiary's HRM heads tend to spend most of their careers in HRM	0.32
J8. Company's desire for consistency among HRM/Personnel practices worldwide	0.31
R22. Your subsidiary's HRM heads tend to be rotated into the position	0.30
N12R. Nationality of Subsidiary Head	0.26
H7. Years of experience Subsidiary Head had previously in parent company headquarters in America.	0.23

Thus, the variables comprising the final composite representing control of the subsidiary through socialization programs by the parent are:

H7. Years of experience subsidiary head had previously in:

H7. Parent company headquarters in America:

- | | | |
|------------|---------------------|------------|
| A. None | B. Less than 2 yrs. | C. 3-5 yrs |
| D. 6-9 yrs | E. 10+ yrs | |

N12R. Nationality of subsidiary head:

_____ Japanese; _____ Non-Japanese.

(R) Please agree or disagree to the following statements on a scale of 1-7:

R21. Your subsidiary's HRM heads tend to spend most of their careers in HRM

R22. Your subsidiary's HRM heads tend to be rotated into the position

Mimetic isomorphic pressure with the parent: reference groups.

The definition of the "organizational field" suggests that the environment can be viewed as a set of organizational ties within a common network (see Warren 1967, DiMaggio and Powell 1983: 148). DiMaggio (1986a) suggests that the links between these organizations can be characterized in network terms and the substance of the links can range from formal relationships to personal friendships. Here, I examine this network in terms of the contacts between the subsidiary head and subsidiary HRM head and the following local and parent organizations: 1) headquarters top level management in the U.S., 2) headquarters HRM unit in the U.S., 3) Japanese joint venture partner (if there is one). I also asked the respondent to whom they reported directly (requesting the position and location that of person).¹⁶³

The more uncertain an undertaking, the more desirable it is to have higher frequency and informality in communication patterns (Tushman 1979). Thus, I included in my questionnaire items asking about the perceived uncertainty of the environment with regard to economic and personnel practice trends, as well as

¹⁶³While top management communications with other organizations only represent a small portion of the focal organization's communications with other organizations, limited space suggested that having top management's communications might have the greatest relevance and accuracy here, as they are the most likely ones to be communicating with the parent organization.

competition. Similarly, effectively adapting to environmental uncertainty requires unstructured decision-making processes, which usually involve dense communication patterns (Duncan 1973). As such, the high frequency of inter-unit communication helps to facilitate the adoption and diffusion of innovation across multinational subsidiaries (Ghoshal & Bartlett 1988). In addition, Keegan (1974) suggests that oral communication provides an important source of information for managers in environmental scanning in MNEs. In sum, denser communication patterns create more conduits for the transfer of practices. Therefore, I included in my questionnaire items asking about the frequency of communication as well as the identity of communication contacts.

I operationalized communication networks between subsidiary heads, subsidiary HRM heads, headquarters top management and headquarters HRM using the following items:

(Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your Japanese subsidiary's characteristics.

J18. Degree of uncertainty facing the subsidiary with regard to future competition

J19. Degree of uncertainty facing the subsidiary with regard to future economic trends in the Japanese market

J20. Degree of uncertainty facing the subsidiary with regard to future personnel trends in the Japanese market

(K) Please estimate the amount of contact either formal or informal of the Japanese subsidiary head and the subsidiary HRM head with the following possible sources of information about Personnel Practices.

Please circle one number on the following 1-7 scale with

1: Never

2: Once per year

3: Twice per year

4: 4-6 Times per year

5: Monthly

6: Weekly

7: Daily

	Head	HRM Head
K1. Headquarters top level management in the U.S.		
	KP1	KH1
K2. Headquarters HRM unit in the U.S.	KP2	KH2

M1. In whose eyes is it important that your personal performance be highly regarded? (1-7 Scale)

Executive to whom you report directly

Other managers in comparable positions in the company

Your immediate subordinates

Local Japanese customers

Managers in comparable positions in Japanese firms

Managers in comparable positions in other MNEs in Japan

Professional colleagues

N9. Has your subsidiary hosted groups of American managers to examine Japanese management practices? Y/N

(R) Please agree or disagree with the following statements on a scale of 1-7:
Disagree Agree

R5. Personnel practices in this subsidiary have changed very little since its founding

R6. Personnel practices in this subsidiary are in a period of great change right now

R9. Japanese personnel practices are evolving toward American patterns

R10. The new generation of Japanese employee is looking for more American style HRM patterns

R11. Personnel practices in your headquarters are seen as quite advanced

R15. Leading edge international personnel practices can be found in American multinationals

H18R. Year American parent first began operations in Japan.

A. Before 1952 B. 1952--63 C. 1964-73 D. 1974-85 E. 1986-1992

J) Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your American parent company's, "HQ" (headquarters') characteristics.

J1. Clarity of the American parent company's culture or managerial style

J2. Clarity of American parent company's future goals

(R) Please agree or disagree to the following statements on a scale of 1-7:

R19. Within the parent firm, HRM is regarded as a strategically important function

R20. Within your subsidiary, HRM is regarded as a strategically important function.

The Pearson correlation coefficients for the two-way correlations of the variables comprising the mimetic isomorphic pressures composite are provided below. Intercorrelations among the following isomorphic pressures appeared to be somewhat strongly correlated, with intercorrelations among themselves all above .3:

Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your Japanese subsidiary's characteristics.

- J18. Degree of uncertainty facing the subsidiary with regard to future competition
- J19. Degree of uncertainty facing the subsidiary with regard to future economic trends in the Japanese market
- J20. Degree of uncertainty facing the subsidiary with regard to future personnel trends in the Japanese market

(K) Please estimate the amount of contact either formal or informal of the Japanese subsidiary head and the subsidiary HRM head with the following possible sources of information about Personnel Practices.

Please circle one number on the following 1-7 scale with

- | | | |
|------------------------------|-------------------------|--------------------------|
| <i>1: Never</i> | <i>2: Once per year</i> | <i>3: Twice per year</i> |
| <i>4: 4-6 Times per year</i> | <i>6: Weekly</i> | <i>7: Daily</i> |
| <i>5: Monthly</i> | | |

- | | | |
|---|------|----------|
| | Head | HRM Head |
| K1. Headquarters top level management in the U.S. | KP1 | KH1 |
| K2. Headquarters HRM unit in the U.S. | KP2 | KH2 |

J) Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your American parent company's, "HQ" (headquarters') characteristics.

- J1. Clarity of the American Parent company's culture or managerial style
- J2. Clarity of American Parent company's future goals

(R) Please agree or disagree to the following statements on a scale of 1-7:

- R19. Within the parent firm, HRM is regarded as a strategically important function
- R20. Within your subsidiary, HRM is regarded as a strategically important function

Table 11.16
 Pearson product moment correlations
 Mimetic isomorphic pressure indicators

	J1	J2	R19	R20	H18R	J18	J19	J20	KH1	KP1
J1	1.00	0.82	0.27	0.23	0.08	-0.06	-0.14	0.04	0.18	0.01
J2	0.82	1.00	0.38	0.23	0.03	-0.13	-0.19	-0.14	0.35	0.16
R19	0.27	0.38	1.00	0.45	0.01	-0.11	-0.15	-0.33	0.24	-0.04
R20	0.23	0.23	0.45	1.00	-0.01	-0.08	-0.14	-0.27	0.01	0.08
H18R	0.08	0.03	0.01	-0.01	1.00	-0.30	-0.36	-0.02	-0.15	-0.27
J18	-0.06	-0.13	-0.11	-0.08	-0.30	1.00	0.94	0.58	-0.10	-0.14
J19	-0.14	-0.19	-0.15	-0.14	-0.36	0.94	1.00	0.62	-0.14	-0.20
J20	0.04	-0.14	-0.33	-0.27	-0.02	0.58	0.62	1.00	-0.06	-0.16
KH1	0.18	0.35	0.24	0.01	-0.15	-0.10	-0.14	-0.06	1.00	0.53
KP1	0.01	0.16	-0.04	0.08	-0.27	-0.14	-0.20	-0.16	0.53	1.00
KH2	0.21	0.32	0.08	0.12	-0.04	-0.20	-0.21	-0.17	0.56	0.54
KP2	0.21	0.34	0.00	0.05	-0.15	-0.21	-0.18	-0.17	0.46	0.56
M1	-0.09	-0.04	-0.13	-0.11	-0.27	-0.06	0.00	-0.02	0.05	0.18
N9	0.04	0.07	0.15	-0.06	0.27	-0.15	-0.25	-0.14	0.12	-0.10
R5	-0.03	-0.10	-0.15	-0.22	0.13	-0.04	-0.04	0.01	-0.30	-0.46
R6	0.05	0.04	-0.08	0.36	-0.01	-0.08	-0.06	0.18	0.24	0.21
R9	0.05	-0.01	-0.14	-0.06	0.17	-0.03	-0.02	0.32	0.22	0.08
R10	0.05	0.01	-0.09	-0.06	0.17	0.10	0.00	0.18	0.23	0.19
R11	0.50	0.44	0.34	0.08	0.19	-0.10	-0.13	0.10	-0.02	-0.17
R15	0.15	0.10	0.03	-0.19	-0.08	0.07	-0.01	0.03	0.16	-0.13

Table 11.16
 Pearson product moment correlations
 Mimetic isomorphic pressure indicators

	KH2	KP2	M1	N9	R5	R6	R9	R10	R11	R15
J1	0.21	0.21	-0.09	0.04	-0.03	0.05	0.05	0.05	0.50	0.15
J2	0.32	0.34	-0.04	0.07	-0.10	0.04	-0.01	0.01	0.44	0.10
R19	0.08	0.00	-0.13	0.15	-0.15	-0.08	-0.14	-0.09	0.34	0.03
R20	0.12	0.05	-0.11	-0.06	-0.22	0.36	-0.06	-0.06	0.08	-0.19
H18R	-0.04	-0.15	-0.27	0.27	0.13	-0.01	0.17	0.17	0.19	-0.08
J18	-0.20	-0.21	-0.06	-0.15	-0.04	-0.08	-0.03	0.10	-0.10	0.07
J19	-0.21	-0.18	0.00	-0.25	-0.04	-0.06	-0.02	0.00	-0.13	-0.01
J20	-0.17	-0.17	-0.02	-0.14	0.01	0.18	0.32	0.18	0.10	0.03
KH1	0.56	0.46	0.05	0.12	-0.30	0.24	0.22	0.23	-0.02	0.16
KP1	0.54	0.56	0.18	-0.10	-0.46	0.21	0.08	0.19	-0.17	-0.13
KH2	1.00	0.77	0.04	0.12	-0.35	0.22	0.09	0.18	0.14	-0.02
KP2	0.77	1.00	0.09	-0.14	-0.25	0.15	0.05	0.08	-0.03	-0.09
M1	0.04	0.09	1.00	-0.09	0.10	0.12	-0.02	-0.13	-0.10	0.08
N9	0.12	-0.14	-0.09	1.00	0.10	-0.18	0.17	0.22	0.18	0.28
R5	-0.35	-0.25	0.10	0.10	1.00	-0.34	0.08	0.01	-0.01	0.25
R6	0.22	0.15	0.12	-0.18	-0.34	1.00	0.24	0.03	0.03	0.04
R9	0.09	0.05	-0.02	0.17	0.08	0.24	1.00	0.75	0.31	0.45
R10	0.18	0.08	-0.13	0.22	0.01	0.03	0.75	1.00	0.23	0.43
R11	0.14	-0.03	-0.10	0.18	-0.01	0.03	0.31	0.23	1.00	0.30
R15	-0.02	-0.09	0.08	0.28	0.25	0.04	0.45	0.43	0.30	1.00

Using only variables with intercorrelations of .3 or greater, I developed a composite using principal components analysis. The composite with the largest eigenvalue below explains 68% of the variance explained by the original variables. It also has the highest internal consistency, as verified by a Cronbach's Alpha, suggesting that it best represents the above isomorphic pressure indicators. Examining the eigenvectors comprising the largest composite, I excluded variables

whose eigenvectors for the largest principal component did not meet the minimum criterion for small eigenvectors ($.3/\text{square root of the eigenvalue of the largest composite}$). The eigenvectors for the final composite are all large, suggesting that these variables comprise the final composite. The variables and their eigenvectors comprising the final composite are listed below.

Table 11.17
Final composite eigenvalues for principal component of
mimetic isomorphic pressure

COMPOSITE	Eigenvalue "PC"	Proportion of Iso. Variables Variance Explained by Composite
MIMET41	3.44	0.31
MIMET42	2.30	0.21
MIMET43	1.81	0.16

Table 11.18
Final Composites
Eigenvectors
For the mimetic isomorphic pressure composite

Eigenvectors	Composite of mimetic isomorphic pressures
KH2. Subsidiary head's communications with headquarters HRM unit in the U.S.	0.40
KP2. Subsidiary head's communications with headquarters HRM unit in the U.S.	0.39
J2. Clarity of American parent company's future goals	0.35
KH1. Subsidiary head's communications with headquarters top level management in the U.S.	0.34
KP1. Subsidiary head's communications with headquarters top level management in the U.S.	0.33
J1. Clarity of the American parent company's culture or managerial style	0.28
R19. Within the <u>parent firm</u> , HRM is regarded as a strategically important function	0.21
R20. Within your <u>subsidiary</u> , HRM is regarded as a strategically important function	0.17
J19. Degree of uncertainty facing the subsidiary with regard to future <u>economic</u> trends in the Japanese market	-0.27
J18. Degree of uncertainty facing the subsidiary with regard to future competition	-0.26
J20. Degree of uncertainty facing the subsidiary with regard to future <u>personnel</u> trends in the Japanese market	-0.20

Thus, the variables comprising the final composite representing mimetic isomorphic pressure between the parent and the subsidiary are:

Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your Japanese subsidiary's characteristics.

- J18. Degree of uncertainty facing the subsidiary with regard to future competition
- J19. Degree of uncertainty facing the subsidiary with regard to future economic trends in the Japanese market
- J20. Degree of uncertainty facing the subsidiary with regard to future personnel trends in the Japanese market

(K) Please estimate the amount of contact either formal or informal of the Japanese subsidiary head and the subsidiary HRM head with the following possible sources of information about personnel practices.

Please circle one number on the following 1-7 scale with

- | | |
|--------------------------|------------------------------|
| <i>1: Never</i> | <i>2: Once per year</i> |
| <i>3: Twice per year</i> | <i>4: 4-6 Times per year</i> |
| <i>5: Monthly</i> | <i>6: Weekly</i> |
| <i>7: Daily</i> | |

- | | Subsidiary
Head | Subsidiary
HRM Head |
|---|--------------------|------------------------|
| K1. Headquarters top level management in the U.S. | KP1 | KH1 |
| K2. Headquarters HRM unit in the U.S. | KP2 | KH2 |

J) Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your American parent company's, "HQ" (headquarters') characteristics.

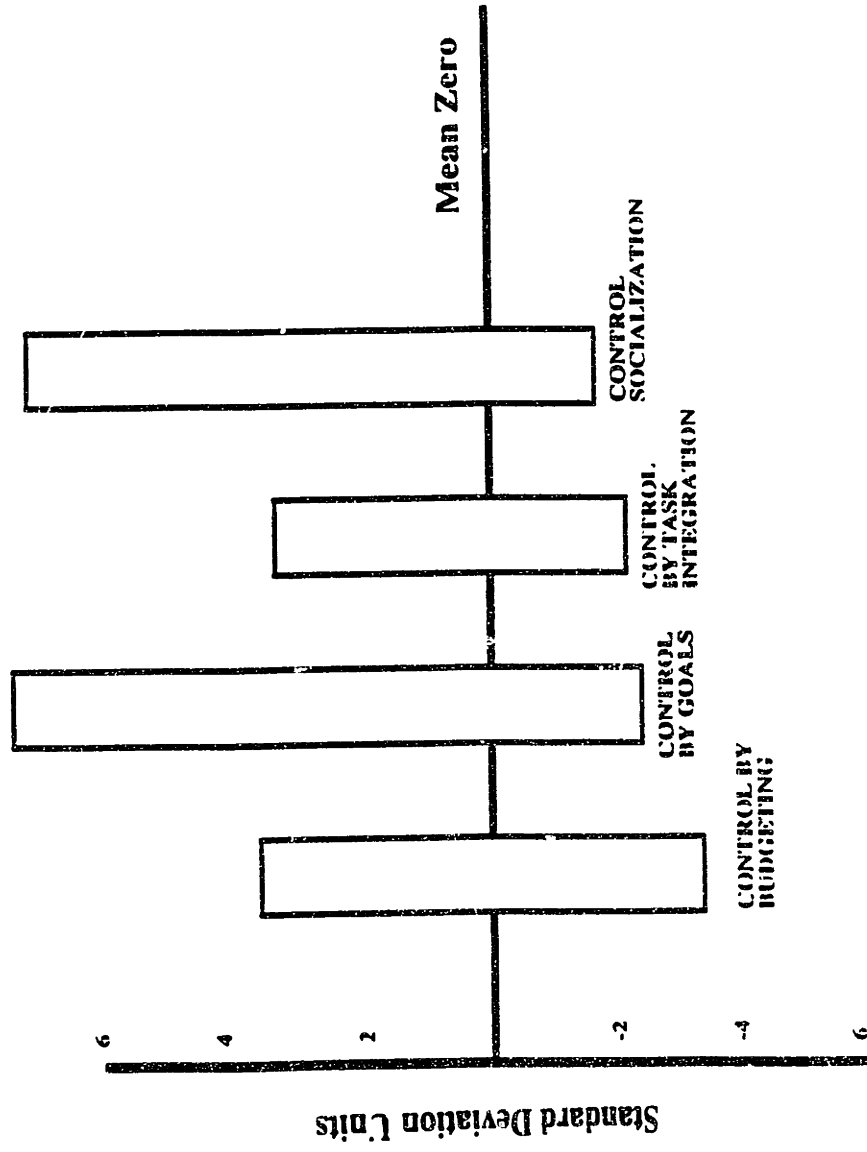
- J1. Clarity of the American Parent company's culture or managerial style
- J2. Clarity of American Parent company's future goals

(R) Please agree or disagree to the following statements on a scale of 1-7:

- R19. Within the parent firm, HRM is regarded as a strategically important function
- R20. Within your subsidiary, HRM is regarded as a strategically important function

To put these composites in context with each other, I look at their range of values and their intercorrelations. Since principal components are all standardized at mean zero, their range is compared below in standard deviation units. As demonstrated by Figure 11.1, the range on control by budgeting went from -2.6 to 3.8 standard deviation units.

Describing the isomorphic pressure composites



In their relationships to each other, control through budgeting is correlated with control through goal-setting and control through task integration, but it is not strongly related to any of the other isomorphic pressures.

Table 11.19
Pearson product moment correlations
of isomorphic composites

	Control through budgeting	Control through goal setting (ends)	Control through task integration	Control through socialization (normative isomorph.)
Control through goal setting (ends)	.36 (.028)			
Control through task integration	.38 (.022)	.15 (.401)		
Control through socialization (norm)	-.039 (.95)	.12 (.402)	.01 (.92)	
Control through policy (rules)	.56 (.0004)	.44 (.0008)	.15 (.397)	-.05 (.683)

In evaluating these composite measures, their main advantage is that they offer more insight into isomorphic pressures as a group and thus into the larger organizational pressure than do simply looking at individual indicators separately. On the other hand, the disadvantage is that the sample size and the statistical software do not allow one to single out practices strongly emphasized by the parent firm.

The steps in performing a Principal Components Analysis include: 1) removing the problem of origin and scale by standardizing each of the x raw variables to mean zero and standard deviation one for each observation and thus reducing the total variance in the data set to x units of variance; 2) creating x new variables which are weighted composites of the standardized scores and which redistribute the original x units of variance to the principal Components; and 3) determining the share of variance explained by each variable by examining the eigenvalues. Each principal component is a linear combination of the variables such that the coefficients of these linear combinations are chosen so that the values of any two principal components are uncorrelated, and for any principal component, the sum of squares of the coefficient is one (Affifi and Clark, p. 320).

In step 1, the PRINCOMPS command in SAS initially standardizes each of the x variables to mean zero and standard deviation one, so that the variables all have equal variance. Thus, the "non-standardized" data matrix is replaced by the standardized data matrix, which removes the problem of origin and scale. The formula for standardizing the variables is:

$$\frac{(\text{Observation } \#j \text{ for Variable } i - \text{Mean of Variable } i)}{\text{Standard Deviation of Variable } i}$$

In step 2, PRINCOMPS creates new variables (in this case, three new variables to replace the three original ones) that are weighted composites of the standardized variables. To do this, principal components analysis uses the standardized variables as given by the eigenvalues and the eigenvectors. eigenvectors are the coefficients of the linear combination which represents the Principal component. These eigenvectors or "a" values were created by the computer, such that 1) the variables Principal Component # 1 through Principal Component # 3 are mutually uncorrelated, and 2) Principal Component # 1 has the maximum variance possible, Principal Component # 2 has the next most variance possible, and so on, so that the composites are listed in order of decreasing variance. There is only one set of eigenvectors or "a" values which satisfy this condition (unlike the multitude of possible solutions in Factor Analysis). The formula for creating weighted composites, using the standardized variables and the eigenvectors, is as follows:

$$\text{Principal Component \#1} = a_{11}x_1 + a_{12}x_2 + a_{13}x_3 + a_{14}x_4 + a_{15}x_5 + a_{16}x_6$$

In the above formula, a_{ij} represents the eigenvectors and x_k represents the standardized variables.

Guidelines for interpreting the magnitude of the principal component coefficients or eigenvectors include: 1) The Cyril Burt Assertion, "The 'a's are 'big' if the magnitude of $|a| \geq .3 / \text{Square Root of eigenvalue}$ where the square root of the eigenvalue is the standard deviation of the composite, and thus 'big' is significantly different from zero," and 2) The Affifi and Clark Assertion, "The 'a's are 'big' if the magnitude of $|a| \geq .5 / \text{Square Root of eigenvalue}$ where the square root of the eigenvalue is the correlation between the composite and each of the values." (Affifi and Clark, p. 316). In this exercise, the variables whose loadings or eigenvectors are less than the Burt value of $.3 / \text{Square Root of eigenvalue}$ are SMALL, while variables whose eigenvectors are greater than the Affifi and Clark value of $.5 / \text{Square Root of eigenvalue}$ are BIG. Large eigenvector values suggest that the original variable exerts a strong influence on the principal component, while small eigenvector values suggest only limited influence. I use the small eigenvector criteria here to eliminate variables making only small contributions.

Step 3 determines the share of variance explained by each principal component by examining the eigenvalues. The eigenvalues are the variance of the principal components which always add up to the original variance. I started off with three standardized variables, each with unit variance (standard deviation = 1) for a total of three units of variance all together. This total variance has been redistributed among the three new principal components as demonstrated above so that Principal Component # 1 has the most variance and Principal Component # 2 the next most variance. Accordingly, Principal Component # 1 also has the highest internal consistency, as verified by a Cronbach's Alpha (a measure of internal consistency).

Chapter 12:
Measuring the isomorphism of personnel practice routines in American parent firms and their subsidiaries in Japan.

One of the central issues in this thesis is how best to measure isomorphism. This chapter begins to address this issue by discussing the general concept of isomorphism and giving examples of possible ways to measure it in various contexts. It then operationalizes isomorphism in the context of parent-subsidiary similarity in the area of personnel practices. To do this, this chapter develops two main criteria to define isomorphism: 1) strong emphasis on a practice in the parent firm, and 2) small differences in the emphasis on the practice between the parent and the subsidiary. Logic suggests that a prerequisite for similarity in practices between the parent and the subsidiary is that the parent strongly emphasize a practice, so that as the parent exerts pressure on the subsidiary to emulate it, the subsidiary conforms.¹⁶⁴

Institutional theory proposes that organizational structures and processes are similar across organizations as a result of isomorphic pressures. Drawing on Meyer and Rowan (1977), one definition of isomorphism is similarity among practices and procedures as defined by prevailing accepted concepts of behavior in various organizations in the environment.

As a generic concept, then, isomorphism can be defined as the replication of organizational structures, processes, or practices. As such, it can be measured as the similarity of those organizational structures, processes, or practices. Thus, isomorphism can be measured in several diverse ways. For example, DiMaggio and Powell (1991: 76) suggest that "the best indicator of isomorphic change is a decrease in the variation and diversity, which could be measured by lower standard deviations of the values of selected indicators in a set of organizations...since the effect of

¹⁶⁴In addition, the parent ostensibly has the desire for the subsidiary to emulate its practices.

institutional isomorphism is homogenization" (1991: 76). Thus, across a population of firms, isomorphism could be explored in terms of similarity in emphasis or other characteristics of structures, processes, or practices as measured through low standard deviations.

Rosenzweig (1993) compared parent and subsidiary firms across four functional areas of the firm: 1) marketing, 2) HRM, 3) financial control, and 4) manufacturing, using five measures of each area. He looked at items such as:

Marketing

- the percentage of annual sales spent on advertising
- the relative price point of products or services
- the percentage of annual revenues derived from new products or services
- geographic scope of marketing
- percentage of sales accounted for by direct sales force.

HRM

- total time off
- percentage of employees participating in at least one training program this year
- percentage of managers that is female
- percentage of total salaries and benefits accounted for by benefits
- percentage of total compensation of top management represented by bonus, stock options, and other performance-based compensation vs. straight salary in a typical year.

Financial control

- how far into the future revenues and expenses are projected
- whether the subsidiary sets conservative or aggressive targets
- frequency of revision of financial targets
- extent to which capital budgeting decisions are based primarily on quantitative criteria vs. primarily qualitative data
- the extent to which the firm relies on financial measures versus other measures to evaluate performance of the subsidiary.

Manufacturing

- the degree of automation
- the fraction of manufacturing, plant, and equipment that has been newly purchased or modernized in the past five years
- the annual inventory turnover
- level of quality (as a measure of defects) achieved over the last year
- average level of capacity utilization.

Rosenzweig's study proposed to compare "practices" (1992:8). Yet, his practices appear to be more representative of criteria or goals of practices rather than actual

practices themselves. In particular, several of his measures appear to reflect achievement in the year of the survey rather than ongoing practices, structures, or processes. One problem with using short-term measures--such as the percentage of annual sales spent on advertising, the relative price point of products or services, or level of quality as measure by defect rates achieved over the last year--to represent ongoing organizational characteristics is that these are aspects of the organization most susceptible to economic fluctuations and uneven technological development, and thus the least likely to represent the organization's essential characteristics over time. To achieve better insight into these practices as ongoing characteristics of organizations and to control for variability due to economic fluctuations or uneven technological advancement, one might rephrase Rosenzweig's questions toward assessing firm practices and characteristics in a typical year or over a number of years rather than in this year.

Also because he examines a broad range of businesses, spanning services and manufacturing without controlling for industry, measures such as the degree of automation are more likely to reflect on the industry rather than the firm. Further, Rosenzweig generalizes to all of marketing, HRM, financial control and manufacturing, using only 20 measures (5 measures for each area). Perhaps it would be better to limit generalizability and to include more multiple measures, allowing for characterization of that aspect of the organization.

Perhaps a better way to compare organizations through their practices is to break the practices down into concrete, specific, and clearly identifiable components so that a company can identify whether they employ that particular practice and to what extent they employ it. Other ways to operationalize isomorphism in the context of the MNE include comparing subsidiary practices to practices of competing firms in the foreign environment, as Rosenzweig (1993) did.

Rosenzweig (1993) measured the similarity between parent and subsidiary practices in MNEs by asking subsidiary heads to compare their subsidiary's practices to those of the parent and to practices typical of firms with which they compete in the local environment. To compare practices, Rosenzweig asked the subsidiary head to evaluate the similarity of various practices in the subsidiary and its parent and in the surrounding firms on a five-point scale ranging from "not similar" to "similar." This approach to measuring similarity has the benefit of measuring the similarity on a consistent basis, with one informant providing a similarity rating for both the parent and the subsidiary, allowing the researcher to compare the two organizations from one perspective. However, its strength is somewhat compromised when clear criteria for comparing similarity are not included, and respondents are asked subjectively to estimate the similarity without being given specific criteria for assessment. For example, one manager may consider 5% of annual sales spent on advertising in the subsidiary and 10% in the parent to be similar, whereas another manager may consider the same figures "not similar." Having the managers estimate the actual percentages and numbers and then using decision rules or other criteria to calculate similarity for all measures may increase the standardization of the definition of similarity, particularly as most of Rosenzweig's questions were quantitatively measurable.¹⁶⁵

Suggestions for future research on measuring similarity in practices include estimating the length of time a particular routine has been in place, the percentage of employees who participate in the routine, when the routine was first established, and the number of programs used in training or the number of steps used in a particular process such as recruiting, the number of people involved in each step of the process,

¹⁶⁵Rosenzweig may have resorted to asking for similarity measures instead of direct measures to avoid limiting his response rate by asking questions of too delicate and proprietary a nature.

the amount of planning necessary to repeat each process, how often each process is repeated in a given period of time, how regularly the practice takes place (e.g., annually, monthly, daily), how widespread a certain practice is across departments in a firm, whether practices are centralized in one department or spread over many, and how often practices are modified. However, the most parsimonious measure of a practice still appears to be an evaluation of the practice's use or emphasis in the organization by someone in a position to compare the subsidiary to its parent in the context of the multinational firm.

Operationalizing isomorphism in this study.

Isomorphism is operationalized here as the similarity between parent and subsidiary personnel practices, focusing specifically on recruiting, performance appraisal, and training practices. As discussed earlier, the focus here is limited to routines, the "regular and predictable behavioral patterns of firms including... procedures for hiring and firing, etc." (Nelson and Winter 1982: 14). To capture similarity between parent and subsidiary practices, approximately 40 specific questions about routines were used to elicit information on training, performance appraisal, and recruiting practices. Great care was taken to be very concrete and specific in identifying practices.

Subsidiary heads and subsidiary HRM heads were asked to evaluate the emphasis placed on 40 different personnel practices in their own subsidiary and then the emphasis on the same practice in their parent company. The rationale for having subsidiary heads estimate the emphasis on each practice for both the parent and the subsidiary was to eliminate response bias on the part of different respondents, so that parent and subsidiary practices could be compared from the same perspective. The subsidiary head and the subsidiary HRM head were seen as the people most likely to

be able to evaluate both the parent and the subsidiary. Additional respondents were queried in the parent firm to confirm that the subsidiary estimates were accurate, but often, people in the parent firm's personnel department were found to have spent little or no time in the Japanese subsidiary and were unaware of the practices there. Most subsidiary heads had worked elsewhere in the parent firm, suggesting that the subsidiary head is knowledgeable about the parent's practices. Many of them were sent to Japan by the parent and had extensive experience with the parent, and were, therefore, in a position to evaluate both practices.¹⁶⁶

Rather than being asked to make the comparison, the respondent was asked to merely estimate the emphasis on the practice in both the subsidiary and the parent on an eight-point scale ranging from no emphasis to strong emphasis. While the respondent provided both the independent measures (the isomorphic pressure estimates) and the dependent measures (the emphasis on practices), the difference between subsidiary and parent practices were calculated by the researcher.

Practices emphasized in parent and subsidiary firms in general.

Practices are considered to be isomorphic that meet the following criteria: 1) They are clearly defined practices or routines; 2) they are strongly emphasized in the parent firm; and 3) the absolute difference between the parent and the subsidiary across the sample is less than 1 on a scale ranging from 0 to 7. This section addresses the second criterion and explores practices strongly emphasized in the parent firm.¹⁶⁷

¹⁶⁶It is true that many of the *HRM heads* did not have extensive experience in the parent, so this must be kept in mind when looking at the questionnaires.

¹⁶⁷To gain insight into population-level similarities and differences, I surveyed the subsidiary or HRM heads of 55 of the 171 largest American subsidiaries in Japan to explore how generalizable these recruitment practices and their similarity to each other are to the population of American manufacturers in Japan. This survey was developed by first conducting exploratory interviews with 20 CEOs and HRM heads of American subsidiaries in Japan to explore what practices were of importance to practitioners. As discussed earlier in the research design section, the sample criteria mandated that the firms studied be firms:

- in manufacturing

The next section deals with the third criterion, difference scores. The subsidiary heads or HRM heads of 55 American manufacturers in Japan surveyed here estimated the degree of emphasis placed by both the subsidiary and the parent on 63 personnel practices, grouped into the following categories: 1) recruitment and selection, 2) performance appraisal, 3) providing feedback to employees, 4) compensation and benefits, 5) training and development, and 6) performance improvement programs. I focus on training, performance appraisal, and recruiting in this thesis.

I first examine the range of emphasis placed by parent and subsidiary firms on various recruiting, training, and performance appraisal practices. Next, I define "strong emphasis" and discuss the recruitment and selection practices that were perceived as being strongly emphasized in the parent firms and then in the subsidiaries.

I began by asking subsidiary heads and subsidiary HRM heads to estimate the degree of emphasis placed on 15 recruiting practices and selection criteria in their own subsidiaries in Japan and in their American parent firms, using a 0-7 scale in which "0" indicated that the practice is not used and 7 indicated very strong emphasis (see Table 5.1 below). From these, I selected out 8 recruitment practices which met Nelson and Winter's definition of routine.

Recruitment and selection. With regard to recruiting practices, in the *American parent firms*, the average emphasis on these recruiting practices ranges from 2.58 to 5.60, with "parent use of HRM and line staff interviews" exhibiting the strongest perceived emphasis, and "recruitment from specific schools" exhibiting the least perceived emphasis *across the parent firms*. The low emphasis on selection from specific schools in America may be due to the large number of universities and their

-
- with operations located in Japan
 - with an American parent with 50% or more equity in the subsidiary
 - with over 100 employees in its Japanese operations.

geographic diversity in the U.S. Or, it may be due to a certain egalitarianism in hiring perceived by these respondents.¹⁶⁸

With regard to the subsidiaries in Japan, the average degree of emphasis placed on various recruiting and selection practices or routines by the Japanese subsidiaries ranges from 2.04 to 5.94,¹⁶⁹ with subsidiaries' "use of HRM and line staff interviews" exhibiting the strongest perceived emphasis and "recruitment from specific schools" again exhibiting the least perceived emphasis across the subsidiaries. The strong emphasis on HRM and line staff interviews in the subsidiary may reflect the reality that when operating in a foreign market, the most effective means of gaining market or technical expertise is through quality local personnel. As many of the recruits are mid-career hires, the only way to accurately judge their experience is through interviewing. Thus, carefully interviewing recruits in both the personnel department and the department in which they will work is critically important to developing an organization able to compete successfully in Japan. At the other end of the range of emphasis, the low emphasis in Japan may be because foreign firms do not have as much prestige in Japan as their Japanese counterparts, and thus cannot afford to be so selective in recruiting from only prestigious schools.

¹⁶⁸ This well may be due to response bias, as the respondents were subsidiary heads and not necessarily American. Stephen Carroll's forthcoming study may serve to cross-validate this lack of emphasis on selection from certain schools in America by using data gathered from the same questions in American companies.

¹⁶⁹ This was on a 0-7 scale in which 0 indicated that the practice is not used and 7 indicated very strong emphasis.

Table 12.1
 Perceived emphasis of recruiting practices in the parent sample
 (Sample Size = 55)

Recruiting practice's emphasis in the parent firms and subsidiaries	Total N of Firms	Mean	Standard Deviation
<i>American parent recruitment and selection practices emphasized</i>			
BA6. Use of interviews by HRM staff and managers	45	5.60	1.70
BA2. Use of recruitment from former or present employees of other companies	46	5.52	1.29
BA4. Use of objective skill ability tests	40	4.57	1.73
BA3. Use of recruitment from within (post job openings within company)	45	4.53	1.68
BA7. Use of references	45	4.33	1.52
BA1. Use of recruitment from schools	43	3.74	1.59
BA5. Use of personality tests	33	3.42	1.56
BA8. Recruitment from certain schools only	43	2.58	1.49

Table 12.2
 Perceived emphasis of recruiting practices in the subsidiary sample
 (Sample Size = 55)

Recruiting practice's emphasis in the parent firms and subsidiaries	Total N of Firms	Mean	Standard Deviation
<i>Subsidiary recruitment and selection practices emphasized</i>			
BJ6. Use of interviews by HRM staff and managers	54	5.94	1.33
BJ2. Use of recruitment from former or present employees of other companies	55	5.00	1.50
BJ5. Use of personality tests	45	4.97	2.10
BJ3. Use of recruitment from within (post job openings within company)	55	4.85	1.43
BJ1. Use of recruitment from schools	54	4.85	1.83
BJ4. Use of objective skill ability tests	49	4.46	1.80
BJ7. Use of references	47	3.57	1.70
EJ8. Recruitment from certain schools only	47	2.04	1.41

Performance appraisal. In the *American parent firms*, the average emphasis on these performance appraisal practices ranges from 3.44 to 6.20, with the use of formal/structured systems of appraisal (CA1) exhibiting the strongest perceived emphasis, and the use of subjective judgment in performance appraisal (CA4) exhibiting the least perceived emphasis *across the parent firms*. In the subsidiaries in Japan, the average degree of emphasis placed on various performance appraisal practices by the Japanese subsidiaries ranges from 3.53 to 5.98, with the use of formal/structured systems of appraisal (CA1) exhibiting the strongest perceived emphasis, and the use of subjective judgment in performance appraisal (CA4)

exhibiting the least perceived emphasis across the subsidiaries as well as the parent firms. As might have been expected of the Japanese subsidiaries, slightly less emphasis is placed on average on the use of formal/structured systems of appraisal (CA1), and slightly more emphasis is placed on the use of subjective judgment in performance appraisal (CA4) than is the case in the parent firms on average.

Table 12.3
 Perceived emphasis of performance appraisal practices in the parent sample
 (Sample Size = 55)

Performance appraisal practice's emphasis in parent and subsidiary firms	Total N of Firms	Mean	Standard Deviation
<i>American parent performance appraisal practices emphasis</i>			
CA1. Use of formal/structured systems of appraisal	44	6.20	1.04
CA3. Use of numerical performance indicators	44	5.56	1.37
CA9. Use of performance standards	44	5.56	1.04
CA8. Use of management by objectives system	44	5.50	1.22
CA7. Use of multiple measures of performance	41	5.07	1.36
CA6. Use of long term (one year+) performance indicators	42	4.26	1.72
CA5. Use of self-assessment evaluations	41	4.21	1.44
CA10. Use of trait measurement system	41	3.75	1.44
CA2. Use of informal systems of appraisal	41	3.53	1.68
CA4. Use of subjective judgment in performance appraisal	43	3.44	1.65

Table 12.4
 Perceived emphasis of performance appraisal practices in the subsidiary sample
 (Sample Size = 55)

Performance appraisal practice's emphasis in parent and subsidiary firms	Total N of Firms	Mean	Standard Deviation
<i>Subsidiary performance appraisal practices emphasis</i>			
CJ1. Use of formal/structured systems of appraisal	55	5.98	1.01
CJ8. Use of management by objectives system	54	5.05	1.26
CJ7. Use of multiple measures of performance	51	5.01	1.20
CJ9. Use of performance standards	54	4.96	1.21
CJ6. Use of long term (one year+) performance indicators	52	4.94	1.41
CJ3. Use of numerical performance indicators	55	4.90	1.65
CJ5. Use of self-assessment evaluations	50	4.30	1.71
CJ2. Use of informal systems of appraisal	52	3.86	1.85
CJ10. Use of trait measurement system	51	3.56	1.40
CJ4. Use of subjective judgment in performance appraisal	54	3.53	1.72

Training. In the *American parent firms*, the average emphasis on these training practices ranges from 3.20 to 5.51, with the use of technical knowledge training (FA6) exhibiting the strongest perceived emphasis, and the use of foreign language training (FA9) exhibiting the least perceived emphasis *across the parent firms*. This is in keeping with expectations that American firms have traditionally

placed very little emphasis on foreign language training and much more emphasis on technical skill acquisition. Counter to expectation, American parents on average also place a high emphasis on in-house training (mean = 5.36). With regard to the subsidiaries in Japan, the average degree of emphasis placed on various training practices by the Japanese subsidiaries ranges from 3.98 to 5.84, with the use of entry level training (FJ11) and informal coaching (FJ2) exhibiting the strongest perceived emphasis and the use of international training for expatriate managers (FJ12) exhibiting the least perceived emphasis across the subsidiaries. This high emphasis on entry level training may reflect a desire by American firms in Japan to emulate their Japanese competition, which places a very strong emphasis on entry-level training.

Table 12.5
 Perceived emphasis of training practices in the parent sample
 (Sample Size = 55)

Training practice emphasis in parent and subsidiary firms	Total N of Firms	Mean	Standard Deviation
<i>American parent training practice emphasis</i>			
FA6. Use of technical knowledge training	43	5.51	0.98
FA1. Use of in-house classroom training	44	5.36	1.35
FA7. Use of general problem solving training	41	5.29	1.10
FA2. Use of informal coaching by supervisors	42	5.00	1.50
FA3. Use of outside (external) classroom training	43	4.67	1.32
FA4. Use of individual development plans	40	4.65	1.25
FA8. Use of interpersonal skills training	40	4.55	1.28
FA5. Use of creativity enhancement training	40	4.47	1.36
FA11. Use of entry level training for employees	39	4.08	1.71
FA12. Use of international training for expatriates	41	4.08	1.45
FA10. Use of formal mentoring programs	36	3.75	1.73
FA9. Use of foreign language training	39	3.21	1.54

Table 12.6
 Perceived emphasis of training practices in the subsidiary sample
 (Sample Size = 55)

Training practice emphasis in parent and subsidiary firms	Total N of Firms	Mean	Standard Deviation
<i>Subsidiary training practices emphasis</i>			
FJ11. Use of entry level training for employees	53	5.85	1.39
FJ2. Use of informal coaching by supervisors	54	5.57	1.19
FJ6. Use of technical knowledge training	54	5.44	1.02
FJ1. Use of in-house classroom training	54	5.42	1.42
FJ9. Use of foreign language training	55	5.24	1.53
FJ7. Use of general problem solving training	52	4.92	1.23
FJ10. Use of formal mentoring programs	49	4.86	1.49
FJ8. Use of interpersonal skills training	52	4.56	1.35
FJ3. Use of outside (external) classroom training	54	4.37	1.20
FJ5. Use of creativity enhancement training	51	4.16	1.27
FJ4. Use of individual development plans	51	4.12	1.18
FJ12. Use of international training for expatriates	50	3.98	1.71

Practices strongly emphasized in the parent.

Logic suggests that a necessary pre-condition for coercive isomorphism is that the organization in authority holds certain practices as being very important and, therefore, emphasizes those practices. To maximize the sample size while still capturing strong parental emphasis, the decision rule for strong parental emphasis was determined to be those practices exhibiting an emphasis of 4 or greater (on a scale of 0-7) on a firm-by-firm basis. Thus, to examine individual practice differences in light of strong parental emphasis, only those firms are included in the analysis in which the parent is perceived to place a 4 or more emphasis rating on a scale of 1-7 for an individual given practice. (Firms in which the parent places an emphasis of three or less on a scale of 1-7 are excluded.)

Practices strongly emphasized in the parent are defined as those practices demonstrating an emphasis of greater than or equal to 4 on a scale from 0 to 7. Thirteen of the 41 training, recruiting, and performance appraisal practices are strongly emphasized in over two-thirds of the parent firms.

Table 12.7
 Parent emphasis on
 recruiting practices in which parent emphasis scores ≥ 4 .

Practices strongly emphasized in the parent	Total number of parent firms strongly emphasizing practices	Mean emphasis by the parent	Standard deviation of practice emphasis
<i>Average emphasis in parent on Recruiting practices strongly emphasized by the parent firm</i>			
B6. Use of interviews by HRM staff and managers	37	6.27	0.93
B2. Use of recruitment from former or present employees of other companies	41	5.82	0.99
B4. Use of objective skill ability tests	31	5.32	1.04
B3. Use of recruitment from within (post job openings within company)	33	5.30	1.18
B1. Use of recruitment from schools	21	5.09	1.13
B7. Use of references	36	4.91	1.02
B5. Use of personality tests	18	4.61	0.78
B8. Recruitment from certain schools only	13	4.53	0.78

Table 12.8
 Parent emphasis on
 performance appraisal practices in which parent emphasis scores ≥ 4 .

Practices strongly emphasized in the parent	Total number of parent firms strongly emphasizing practices	Mean emphasis by the parent	Standard deviation of practice emphasis
<i>Average emphasis in parent on Performance appraisal practices strongly emphasized by the parent firm</i>			
C1. Use of formal/structured systems of appraisal	43	6.27	0.93
C8. Use of management by objectives system	39	5.82	0.88
C3. Use of numerical performance indicators	42	5.76	1.05
C9. Use of performance standards	41	5.75	0.79
C7. Use of multiple measures of performance	32	5.65	0.90
C6. Use of long term (one year+) performance indicators	26	5.42	0.98
C4. Use of subjective judgment in performance appraisal	19	5.05	0.91
C5. Use of self-assessment evaluations	28	4.96	1.07
C2. Use of informal systems of appraisal	21	4.95	0.86
C10. Use of trait measurement system	24	4.75	0.89

Table 12.9
 Parent emphasis on
 training practices in which parent emphasis scores ≥ 4 .

Practices strongly emphasized in the parent	Total number of parent firms strongly emphasizing practices	Mean emphasis by the parent	Standard deviation of practice emphasis
<i>Average emphasis in parent on training practices strongly emphasized by the parent firm</i>			
F1. Use of in-house classroom training	40	5.62	1.10
F6. Use of technical knowledge training	43	5.51	0.98
F2. Use of informal coaching by supervisors	35	5.48	1.06
F7. Use of general problem solving training	40	5.37	0.97
F3. Use of outside (external) classroom training	39	5.05	0.97
F11. Use of entry level training for employees	27	5.00	1.07
F10. Use of formal mentoring programs	21	4.95	1.07
F4. Use of individual development plans	35	4.94	0.99
F5. Use of creativity enhancement training	32	4.93	1.07
F8. Use of interpersonal skills training	34	4.91	0.96
F12. Use of international training for expatriates	30	4.76	0.93
F9. Use of foreign language training	17	4.65	0.93

Recruiting practices strongly emphasized in many parent firms.

With regard to recruiting and selection practices, the use of recruitment from other companies (B2) is strongly emphasized in 75% of the parent firms (41 of the 55 parent firms). Similarly, the use of interviews by HRM staff (B6) is strongly emphasized in two-thirds or more of the firms (37 of the 55 parent firms in this case).

Table 12.10
Recruiting emphasis scores in parent firms strongly emphasizing these practices
(emphasis ≥ 4).

Recruiting practices	Number of parent firms strongly emphasizing the practice (emphasis ≥ 4)
B2. Use of recruitment from former or present employees of other companies	41
B6. Use of interviews by HRM staff and managers	37
B7. Use of references	36
B3. Use of recruitment from within (post job openings within company)	33
B4. Use of objective skill ability tests	31
B1. Use of recruitment from schools	21
B5. Use of personality tests	18
B8. Recruitment from certain schools only	13

Performance appraisal practices strongly emphasized in many parent firms. Performance appraisal practices that are strongly emphasized in over 75% of the firms (41 of the 55 firms) include:

- the use of numerical performance indicators (C3)
- the use of performance standards (C9).

In addition, management by objective systems (C8) was used in 66% or more of the firms (39 of the 55 firms in this case).

Table 12.11
Performance appraisal emphasis scores in parent firms strongly emphasizing these practices
(emphasis ≥ 4).

Performance appraisal practices	Number of parent firms strongly emphasizing the practice (emphasis ≥ 4)
C1. Use of formal/structured systems of appraisal	43
C3. Use of numerical performance indicators	42
C9. Use of performance standards	41
C8. Use of management by objectives system	39
C7. Use of multiple measures of performance	32
C5. Use of self-assessment evaluations	28
C6. Use of long term (one year+) performance indicators	26
C10. Use of trait measurement system	24
C2. Use of informal systems of appraisal	21
C4. Use of subjective judgment in performance appraisal	19

Training practices strongly emphasized in many parent firms. Finally, with regard to training, the use of technical training (F6) is strongly emphasized in over 75% of the parent firms (43 of the 55 parent firms in this case). In addition, the use of general problem solving training (F7) is also strongly emphasized in 75% or more of the firms (40 of the 55 parent firms here).

Table 12.12
Training emphasis scores in parent firms strongly emphasizing these practices
(emphasis ≥ 4).

Training practices	Number of parent firms strongly emphasizing the practice (emphasis ≥ 4)
F6. Use of technical knowledge training	43
F1. Use of in-house classroom training	40
F7. Use of general problem solving training	40
F3. Use of outside (external) classroom training	39
F2. Use of informal coaching by supervisors	35
F4. Use of individual development plans	35
F8. Use of interpersonal skills training	34
F5. Use of creativity enhancement training	32
F12. Use of international training for expatriates	30
F11. Use of entry level training for employees	27
F10. Use of formal mentoring programs	21
F9. Use of foreign language training	17

Subsidiary emphasis on practices strongly emphasized in the parent.

For the practices strongly emphasized in parent firms, subsidiary emphasis of the practices ranges from 3.38 on average across subsidiaries to 6.32 on average across subsidiaries. In general, for subsidiaries of parent firms strongly emphasizing training, recruitment, or performance appraisal practices listed above, the average emphasis on those practices across the sample of subsidiaries, falls around 5 on a scale of 0 to 7. With regard to performance appraisal, for practices strongly emphasized in the parent firm, the average emphasis in the subsidiary is above 4 on a scale of 0 to 7 (Table 12.13). The most strongly emphasized performance appraisal practices in the subsidiary include:

- CJ3. Use of numerical performance indicators
- CJ6. Use of long term (one year+) performance indicators
- CJ7. Use of multiple measures of performance
- CJ8. Use of management by objectives system
- CJ9. Use of performance standards

Subsidiary emphasis on recruiting practices strongly emphasized in the parent firm. In recruiting, practice emphasis in the subsidiary for practices strongly emphasized in the parent, ranged from 3.3 to 6.3 (Table 12.14). For the practices strongly emphasized in parent firms, the most strongly emphasized practices in the subsidiary in the recruiting category include:

- BJ1. Use of recruitment from schools
- BJ2. Use of recruitment from former or present employees of other companies
- BJ3. Use of recruitment from within (post job openings within company)
- BJ6. Use of interviews by HRM staff and managers.

Subsidiary emphasis on training practices strongly emphasized in the parent. In terms of training, training practices strongly emphasized in the parent

range in emphasis in the subsidiary from 4.1 to 6.1 (Table 12.15). The practices that are both strongly emphasized in the parent and show the strongest emphasis in the subsidiary include:

- FJ1. Use of in-house classroom training
- FJ2. Use of informal coaching by supervisors
- FJ6. Use of technical knowledge training
- FJ9. Use of foreign language training
- FJ11. Use of entry level training for employees
- FJ12. Use of international training for expatriates.

where most strongly emphasized practices were those with scores greater than 5 on a scale of 0-7.

Table 12.13
Subsidiary performance appraisal emphasis scores in MNEs where the parent strongly emphasizes these practices (emphasis ≥ 4).

Subsidiary emphasis on practices Strongly emphasized in the parent firm	N *	Mean	Standard Deviation
CJ1. Use of formal/structured systems of appraisal	43	5.97	1.01
CJ6. Use of long term (one year+) performance indicator	26	5.65	1.05
CJ8. Use of management by objectives system	39	5.30	1.07
CJ7. Use of multiple measures of performance	32	5.28	0.95
CJ9. Use of performance standards	41	5.17	1.07
CJ3. Use of numerical performance indicators	42	5.07	1.52
CJ5. Use of self-assessment evaluations	27	4.89	1.39
CJ2. Use of informal systems of appraisal	21	4.85	1.31
CJ4. Use of subjective judgment in performance appraisal	19	4.84	1.34
CJ10. Use of trait measurement system	24	4.37	0.92

*Number of parent firms strongly emphasizing the practice.

Table 12.14
 Subsidiary recruiting emphasis scores in MNEs where the parent strongly emphasizes
 these practices
 (emphasis ≥ 4).

Subsidiary emphasis on practices strongly emphasized in the parent firm	N*	Mean	s.d.
BJ6. Use of interviews by HRM staff and managers	37	6.32	0.88
BJ1. Use of recruitment from schools	21	5.33	1.74
BJ3. Use of recruitment from within (post job openings within company)	33	5.06	1.47
BJ2. Use of recruitment from former or present employees of other companies	41	5.02	1.58
BJ5. Use of personality tests	17	4.70	1.82
BJ4. Use of objective skill ability tests	31	4.32	1.70
BJ7. Use of references	31	3.96	1.72
BJ8. Recruitment from certain schools only	13	3.38	1.75

*Number of parent firms strongly emphasizing the practice.

Table 12.15
 Subsidiary training emphasis scores in MNEs where the parent strongly emphasizes these practices (emphasis ≥ 4).

Subsidiary emphasis on practices strongly emphasized in the parent firm	N*	Mean	Standard Deviation
FJ11. Use of entry level training for employees	27	6.07	0.95
FJ1. Use of in-house classroom training	39	5.76	1.13
FJ2. Use of informal coaching by supervisors	35	5.62	1.13
FJ9. Use of foreign language training	17	5.52	1.00
FJ6. Use of technical knowledge training	43	5.51	0.96
FJ10. Use of formal mentoring programs	21	5.23	1.22
FJ7. Use of general problem solving training	39	4.97	1.24
FJ8. Use of interpersonal skills training	32	4.90	1.27
FJ3. Use of outside (external) classroom training	39	4.56	1.07
FJ12. Use of international training for expatriates	28	4.42	1.61
FJ5. Use of creativity enhancement training	31	4.38	1.28
FJ4. Use of individual development plans	34	4.05	1.17

*Number of parent firms strongly emphasizing the practice (emphasis ≥ 4).

In general, of the practices strongly emphasized in the parent firms, performance appraisal practices as a group, are most strongly emphasized in the subsidiaries, followed by training and recruiting. The range of emphasis in the subsidiary across all these practices for firms in which the parent firm strongly emphasizes the practice (emphasis ≥ 4) is from 3.38 to 6.32 on a scale of 0-7.

General difference scores for practices strongly emphasized in parent firms.

Using practices as lenses onto organizations, this section examines the difference between parents and their subsidiaries. I limit the scope of practices to those that represent routines rather than practices that represent motivation, criteria or goals for performance appraisal, and training practices and systems. As discussed earlier, the rationale for selecting routines is that they represent behaviors that are performed over and over and represent the "genes" of the organization and in many ways, the organization's identity.

The difference between parent and subsidiary emphasis on practices that are strongly emphasized in the parent was calculated by first asking the subsidiary head or HRM head to estimate the parent's emphasis on a given practice, and then to estimate the subsidiary's emphasis on the same practice. Respondents were asked to evaluate this emphasis on a scale of 1-7, with 1 representing very little emphasis in the organization and 7 representing strong emphasis. An additional option of an "x" or zero was included for both the parent and the subsidiary to indicate that the practice did not exist. For each practice, the subsidiary emphasis score was subtracted from the parent emphasis score on that practice to arrive at the difference in emphasis. This difference in emphasis represents the degree of isomorphism along each practice for the parent and subsidiary and will be referred to here as "Individual Practice Difference Scores." To maintain uniformity of direction in the scores so that the difference scores range from "similar" (small differences close to zero) to "different" (large differences close to 7), absolute values of these scores were used.¹⁷⁰

¹⁷⁰Practices strongly emphasized in the parent and not in the subsidiary and vice versa were seen as very different because their scores were far apart, even though their signs were different because of the order in which they were subtracted (parent minus subsidiary vs. subsidiary minus parent). Thus, the absolute value is taken so that great differences, either great positive scores or large negative scores were viewed as large differences, and very small scores, close to zero, were viewed as similar.

Thus, difference scores were calculated by taking the absolute value of the difference in emphasis between the parent and subsidiary on each practice in the categories of performance appraisal, recruiting, and training. In particular, difference scores were only calculated for firms in which the parent placed an emphasis of greater than 3 on an 8-point scale ranging from 0 to 7.

The decision rule for determining isomorphism here is that practices are isomorphic where the average, absolute difference between each parent firm's and its subsidiary's practices across the sample of firms is less than 1. In other words, practices are considered to be isomorphic that meet the following criteria: 1) They are practices or routines; 2) they are strongly emphasized in the parent firm; and 3) the absolute difference between the parent and the subsidiary across the sample is less than 1 on a scale ranging from 0 to 7. Practices are defined as different where the average difference between the parents and the subsidiaries across the sample ($n=55$) was greater than 1.

Although difference scores will be examined on a firm-by-firm basis, it may be helpful to make a few brief generalizations here. The difference in emphasis between the parent and the subsidiary for practices strongly emphasized in the parent, ranges from .3 to 1.6 on a scale of 0 to 7. In general, recruiting practices turned out to be more different than similar between parents and their subsidiaries, whereas performance appraisal practices turned out to be similar. Half of the training practices turned out to be similar, while half turned out to be different, according to the above criteria.

Table 12.16
 Parent-subsidiary practice emphasis difference scores
 for practices strongly emphasized in the parent
 (emphasis ≥ 4).

Parent-subsidiary difference scores on practices strongly emphasized in the parent firm	N of parent firms strongly emphasizing the practice (emphasis \geq 4)	Mean of difference scores across MNEs in which the parent firm strongly emphasizes the practice	Standard deviation of difference score
<i>Performance appraisal parent-subsidiary difference scores</i>			
DIFFC2. Use of informal systems of appraisal		21	0.38 0.80
DIFFC1. Use of formal/structured systems of appraisal		43	0.39 0.69
DIFFC6. Use of long term (one year+) performance indicators		26	0.46 0.94
DIFFC7. Use of multiple measures of performance		32	0.50 0.71
DIFFC4. Use of subjective judgment in performance appraisal		19	0.52 0.84
DIFFC10. Use of trait measurement system		24	0.54 0.83
DIFFC8. Use of management by objectives system		39	0.61 0.87
DIFFC9. Use of performance standards		41	0.78 0.96
DIFFC3. Use of numerical performance indicators		42	0.92 1.06
DIFFC5. Use of self-assessment evaluations		27	1.07 1.32

Table 12.17
 Parent-subsiary practice emphasis difference scores
 for practices strongly emphasized in the parent
 (emphasis >=4).

Parent-subsiary difference scores on practices strongly emphasized in the parent firm	N of parent firms strongly emphasizing the practice (emphasis>= 4)	Mean of difference scores across MNEs in which the parent firm strongly emphasizes the practice	Standard deviation of difference score
<i>Recruiting parent-subsiary difference scores</i>			
DIFFB6. Use of interviews by HRM staff and managers	37	0.43	0.86
DIFFB3. Use of recruitment from within (post job openings within company)	33	1.09	1.12
DIFFB5. Use of personality tests	17	1.17	1.07
DIFFB2. Use of recruitment from former or present employees of other companies	41	1.24	1.15
DIFFB7. Use of references	31	1.25	1.38
DIFFB4. Use of objective skill ability tests	31	1.25	1.50
DIFFB1. Use of recruitment from schools	21	1.28	1.42
DIFFB8. Recruitment from certain schools only	13	1.61	1.50

Table 12.18
 Parent-subsidiary practice emphasis difference scores
 for practices strongly emphasized in the parent
 (emphasis ≥ 4).

Parent-subsidiary difference scores on practices strongly emphasized in the parent firm	N of parent firms strongly emphasizing the practice (emphasis ≥ 4)	Mean of difference scores across MNEs in which the parent firm strongly emphasizes the practice	Standard deviation of difference score
---	--	---	--

Training parent-subsidiary difference scores

DIFFF6. Use of technical knowledge training	43	0.55	0.82
DIFFF1. Use of in-house classroom training	39	0.58	0.71
DIFFF2. Use of informal coaching by supervisors	35	0.65	0.84
DIFFF10. Use of formal mentoring programs	21	0.66	0.73
DIFFF8. Use of interpersonal skills training	32	0.68	0.89
DIFFF5. Use of creativity enhancement training	31	0.74	1.03
DIFFF12. Use of international training for expatriates	28	0.89	1.16
DIFFF7. Use of general problem solving training	39	0.92	1.08
DIFFF9. Use of foreign language training	17	1.00	1.00
DIFFF3. Use of outside (external) classroom training	39	1.00	1.12
DIFFF4. Use of individual development plans	34	1.00	1.15
DIFFF11. Use of entry level training for employees	27	1.22	1.15

On average, across the sample, the most similar practice between the parent and the subsidiary is the use of interviews by HRM staff in recruiting, indicating that the parent strongly emphasizes this, but possibly that either the subsidiary emphasizes

it to a much a much smaller or greater degree. For performance appraisal, the most similar practice emphasis is on the formal systems of appraisal, and the most different emphasis on average, across the sample, would be use of self-assessment evaluations. Training practices are most similarly emphasized in both the parent and the subsidiary; on average, there is only .92 difference between parent and subsidiary emphasis, whereas the performance appraisal and the recruiting emphasis differences were much larger, around 1.61 on average across firms. Most of the recruiting is above one, on average, indicating local responsiveness across the sample, whereas most of the training is greater than one, perhaps indicating global integration in this area.

The theory of the MNE suggests that firms should be locally responsive in areas in which success is clearly linked to local customs and tastes, such as recruiting. Thus, little parent-subsidiary similarity is to be expected in recruiting in keeping with the logic that recruiting practices are most likely to be localized to the subsidiary's environment. On the other hand, performance appraisal is most likely to be coordinated with the headquarters to align the multinational's goals.

With regard to training, it appears that the practices that are different between the parent and the subsidiary are those training programs related to foreign language or entry-level training. The data suggest that in these cases, while the parent firm may average around 3 on a scale from 0 to 7, the subsidiary may be significantly higher on these practices, which is also in keeping with the logic that these practices are more likely to occur in the subsidiary than they are in the parent firm.

In evaluating individual practice difference scores between the parent and the subsidiary in which the parent places a strong emphasis on the practice, the major contribution of this is that it may provide MNEs with insight into the possible outcomes in terms of practices of various forms of control and coordination. Drawbacks of measuring isomorphism by employing only individual practices in

which the parent strongly emphasizes the practice are that: (1) individual practices do not necessarily give a good representation of the organization as a whole, and (2) limiting the number of practices examined to only those in which the parent exhibits strong emphasis reduces the sample size considerably. This is a problem in light of the fact that the sample criteria limited the initial potential sample frame to a population of 171 firms, so that even with a very high response rate, reducing such a small sample reduces statistical power considerably.

Chapter 13: Relations between isomorphic pressure and practice similarity.

This chapter summarizes the results from regressions of isomorphic pressures on differences in emphasis of training, performance appraisal, and recruiting practices strongly emphasized in the parent firms (emphasis of 4 or more on a 0-7 scale). It first examines the isomorphic indicators and the differences in parent and subsidiary emphasis on various recruiting, training, and performance appraisal practices (routines) that demonstrate statistically significant relationships with them. It then discusses the relationships in more detail, focusing on the individual practices in light of the various isomorphic pressures which are related to them. Finally, this chapter concludes by comparing the strengths of isomorphic pressures relative to each other.

Normative isomorphism or socialization. Normative isomorphism is represented here as socialization on the part of the parent through the assignment of headquarters expatriates to the subsidiary and rotation of subsidiary top management through other parts of the parent firm.¹⁷¹ Socialization on the part of the parent is

¹⁷¹Specifically, normative isomorphism is represented by the following questions:

H7. Years of experience Subsidiary Head had previously in:

H7. Parent company Headquarters in America:

A. None

B. Less than 2 yrs.

C. 3-5 yrs

D. 6-9 yrs

E. 10+ yrs

N12R. Nationality of Subsidiary/: _____ Japanese; _____ Non-Japanese.

J) Please indicate on the following 1 to 7 scale with 1 indicating *LOW* and 7 indicating *HIGH* the following information about your American parent company's "HQ" (headquarter's) characteristics.

J1. Clarity of the American Parent company's culture or managerial style

J2. Clarity of American Parent company's future goals

J7. Strategic Importance of Subsidiary to American Parent

J8. Company's desire for consistency among HRM/Personnel practices worldwide

(R) Please agree or disagree to the following statements on a scale of 1-7:

Disagree *Agree*

R19. Within the parent firm, HRM is regarded as a strategically important function.

related to seven practice difference scores. Interestingly, as the composite of normative pressures increases, parent-subsidiary emphasis becomes more similar on very "Japanese" practices (outlined in the literature reviews above):

- B1. Use of recruitment from schools
- B3. Use of recruitment from: within (post job openings within company)
- B6. Use of interviews by HRM staff and managers
- C2. Use of informal systems of appraisal
- C6. Use of long term (one year+) performance indicators
- F6. Use of technical knowledge training
- F11. Use of entry level training for employees

Mimetic isomorphism. Mimetic isomorphism is represented here by uncertainty on the part of the subsidiary, contact between the subsidiary and parent, and the regard in which parent practices are held in by the subsidiary.¹⁷² The

- R20. Within your subsidiary, HRM is regarded as a strategically important function
- R21. Your subsidiary's HRM heads tend to spend most of their careers in HRM
- R22. Your subsidiary's HRM heads tend to be rotated into the position

¹⁷²Mimetic isomorphism is represented here by the following questions:

Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your Japanese subsidiary's characteristics.

- J18. Degree of uncertainty facing the subsidiary with regard to future competition
- J19. Degree of uncertainty facing the subsidiary with regard to future economic trends in the Japanese market
- J20. Degree of uncertainty facing the subsidiary with regard to future personnel trends in the Japanese market

(K) Please estimate the amount of contact either formal or informal of the Japanese subsidiary head and the subsidiary HRM head with the following possible sources of information about Personnel Practices.

Please circle one number on the following 1-7 scale with

1: Never	2: Once per year	3: Twice per year
4: 4-6 Times per year	5: Monthly	
6: Weekly	7: Daily	

- | | | |
|---|--------------------|------------------------|
| | Subsidiary
Head | Subsidiary
HRM Head |
| K1. Headquarters top level management in the U.S. | KP1 | KH1 |
| K2. Headquarters HRM unit in the U.S. | KP2 | KH2 |

J) Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your American parent company's, "HQ" (headquarter's) characteristics..

- J1. Clarity of the American parent company's culture or managerial style
- J2. Clarity of American Parent company's future goals

practices most affected by the composite of mimetic pressures on the part of the subsidiary are those practices involving formal, concrete systems that are easily documentable:

- B3. Use of recruitment from within (post job openings within company)
- C1. Use of formal/structured systems of appraisal
- C3. Use of numerical performance indicators
- C6. Use of long term (one year+) performance indicators
- C8. Use of management by objectives system
- F6. Use of technical knowledge training
- F7. Use of general problem solving training.

Control through budgeting. Control through budgeting is represented here by parental control over the subsidiary through budgeting and otherwise limiting the subsidiary's financial autonomy.¹⁷³ The subsidiary practices which become more similar to their parent firm practices in relation to the composite of budgetary and policy control are characterized by a long-term strengthening of internal competencies such as technical knowledge. This indicates that the greater the parent's budgeting and

(R) Please agree or disagree to the following statements on a scale of 1-7:

R19. Within the parent firm, HRM is regarded as a strategically important function

R20. Within your subsidiary, HRM is regarded as a strategically important function

¹⁷³Control through budgeting is indicated in this study by:

J) Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your American parent company's, "HQ" (headquarter's) characteristics..

J1. Clarity of the American Parent company's culture or managerial style

J2. Clarity of American Parent company's future goals

J7. Strategic Importance of Subsidiary to American Parent

J8. Company's desire for consistency among HRM/Personnel practices worldwide

J9. Amount of Am. parent control over Japanese subsidiary's general management policies

J10. Amount of Am. parent control over Japanese subsidiary's personnel policies and practices

J11. Amount of Am. parent control over Japanese subsidiary's total budgeting

J12. Amount of Am. parent control over Japanese subsidiary's HRM budget

J13. Amount of budget control your Am. Parent firm typically has over its foreign subsidiaries

policy and control over the subsidiary, the greater is the similarity in parent and subsidiary emphasis in the following practices:

- C6. Use of long term (one year+) performance indicators
- F1. Use of in-house classroom training
- F6. Use of technical knowledge training.

Control through ends or goal setting. Control through ends is the control of the subsidiary by the parent through goal setting, primarily in the area of performance goals.¹⁷⁴ In general, the emphasis on subsidiary practices that is similar to the parent's emphasis on the same practice under control through ends is in those practices that are long term and oriented toward skills development. This suggests that where the parent firms sets specific targets or goals for the range of performance

¹⁷⁴Control through goal setting is represented in this study by the parent's setting goals in the following areas:

Please check those performance measures for which American parent firm sets clear targets or specific goals for the subsidiary.

- Q1. Sales Growth Rate
- Q2. Market Share
- Q3. Operating Profits
- Q4. Return on Investment
- Q5. Contribution to Consolidated Profits
- Q6. Contribution to Overall Strategic Positioning
- Q7. Market Development
- Q8. Cost Reduction
- Q9. New Product Development
- Q12. Absenteeism Rate of Employees
- Q13. Employee Development

J) Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your American parent company's "HQ" (headquarter's) characteristics..

- J1. Clarity of the American Parent company's culture or managerial style
- J2. Clarity of American Parent company's future goals
- J7. Strategic Importance of Subsidiary to American Parent
- J8. Company's desire for consistency among HRM/Personnel practices worldwide

(R) Please agree or disagree to the following statements on a scale of 1-7:

- R19. Within the parent firm, HRM is regarded as a strategically important function
- R20. Within your subsidiary, HRM is regarded as a strategically important function.

indicators, including sales growth rates, market share, operating profit ROI, contribution to consolidated profits, contribution to overall strategic positioning, market development, cost reduction and new product development, and absenteeism for employees in the subsidiary, parent and subsidiary use of the following practices becomes more similar:

- C6. Use of long term (one year+) performance indicators
- F2. Use of informal coaching by supervisors
- F6. Use of technical knowledge training
- F8. Use of interpersonal skills training.

Control through task and structural interdependence. Control through task interdependence is the control of the subsidiary by the parent through functional coordination. The undertaking of a function is represented here by a zero-one variable. If the subsidiary undertakes the function, it is represented with a 1, if not, a 0. Similarly if the parent undertakes the function, it is represented with a 1, if not, a 0. Interdependence along each function is then represented by subtracting the subsidiary score from the parent score for each function. Where the parent undertakes a function and the subsidiary does not, the subsidiary is dependent on the parent and interdependence is scored as a 1. Where both the subsidiary and the parent undertake the function, they are independent on that function and interdependence is a 0. Where the subsidiary undertakes a function and the parent does not, the parent is dependent on the subsidiary and interdependence is a -1.

There is similar emphasis by subsidiaries and parents on the use of outside (external) classroom training (F3) under control by task interdependence. Conversely, parent-subsidiary emphasis differences on two other practices become dissimilar under control by task and interdependence :

- C6. Use of long term (one year+) performance indicators
- F6. Use of technical knowledge training.

Individual personnel practices in light of isomorphic pressures.

To examine the relationship between similarity in parent and subsidiary personnel practices and isomorphic pressures by the parent on the subsidiary, I examine individual difference in parent and subsidiary practices in relationship to the composites of isomorphic variables outlined in the previous chapter using OLS Regression. Difference scores with statistically significant and negative relationships to the isomorphic pressure variables indicate that the more the parent puts control on the subsidiary the more similar the parent and the subsidiary's personnel practices will become. Practices that demonstrate isomorphism between the parent and the subsidiary in relationship to these coercive, normative, and mimetic isomorphic pressures include practices in training, recruiting, and performance appraisal. Each of these categories of personnel practices is looked at individually in the following sections.

Recruiting practices. Only two recruiting practices that are strongly emphasized in the parent demonstrate a similarity between the parent and the subsidiary emphasis that is significantly related to the isomorphic variables, mimetic isomorphism or normative isomorphism.

Use of recruitment from schools. The use of recruitment from schools (B1) demonstrates a negative relationship with normative isomorphism, indicating that as the percentage of non-Japanese expatriate managers increases and the experience of the HRM head in other units of the American parent increases, and in cases where the subsidiary head and the subsidiary HRM head are not Japanese, the differences between parent and subsidiary recruiting practices decrease.

Use of interviews by HRM staff and line managers. When the parent strongly emphasizes use of interviews by HRM staff and line managers (B6), the difference

between parent and subsidiary use of interviews by these managers in recruiting and selection is statistically significant in its relation to normative isomorphism. A negative relationship here indicates that as normative isomorphism in the form of a larger number of expatriate, longer periods of time spent in the American parent firm by the HRM head, and the numbers of Japanese subsidiary heads and HRM heads increases, the more similar are the parent and the subsidiary's emphasis on use of interviews by HRM staff and managers.

Table 13.1
Fitted regression models in which similarity in parent-subsidiary emphasis on recruiting practices is predicted by isomorphic pressure composites, controlling for firm size, industry, firm age and length of time the subsidiary has been in Japan

	PARAMETER ESTIMATES					Inter cpt	R2	p	DFE	Tol.	F test p
	BUDGT	ENDS	TASK	NORM	MIMET						
Recruiting											
B7. Use of references			-.35			.88	.34	.042	15	.99	.09

Performance appraisal practices. When strongly emphasized in the parent firm, five performance appraisal practices demonstrate similarity that is significantly negatively related to isomorphic pressure on the subsidiary. In general, the relationships between the parent and subsidiary similarity along performance appraisal practices and their relationships with isomorphic pressure are negative indicating that as the subsidiary undergoes greater pressure, its practices are more likely to resemble those of its parent in terms of emphasis on the practice.

Use of numerical performance indicators. When the use of numerical performance indicators (C3) is strongly emphasized in the parent firm, there is a significant and negative relationship between parent-subsidiary practice emphasis similarity and mimetic isomorphism. This suggests that as the subsidiary head's and subsidiary HRM head's communication with headquarters top level management in the U.S. and the headquarters HRM unit in the U.S. increase, the more similar are the parent and subsidiary emphasis on the use of numerical performance indicators (C3).

Use of long term (one year+) performance indicators. When strongly emphasized in the parent firm, the similarity between the parent and subsidiary emphasis on the use of long term performance indicators (one year or longer) (C6) demonstrate statistically significant relationships with control through budgeting, control through policy, control through ends, and structural interdependence. These relationships are negative except for the one between the use of long term indicators and control through task and structural interdependence, indicating that in general as isomorphic pressure increase, similarity between the parent and subsidiary emphasis on the use of long term performance indicators (C6), also increases.

Use of management by objectives system. With regard to the parent's and subsidiary's similar emphasis on the use of management by objectives (C8), there is a

significant relationship between the similarity of emphasis and mimetic isomorphic pressures. This relationship is negative and indicates that as communication between the subsidiary head and subsidiary HRM head and the parent top management and parent HRM unit increases, so does the similarity between the parent and subsidiary emphasis on the use of management by objective.

Table 13.2
Fitted regression models in which similarity in parent-subsubsidiary emphasis on performance appraisal practices is predicted by isomorphic pressure composites, controlling for firm size, industry, firm age and length of time the subsidiary has been in Japan

PERFORMANCE APPRAISAL PRACTICE	PARAMETER ESTIMATES						Int-cpt	r2	p	dfe	Tot.	F Test p
	BUDG	RULE	ENDS	TASK	NORM	MIM						
C6. Use of long term (one year+) performance indicators							.40	.070	15	.99		.029
C6. Use of long term (one year+) performance indicators							.42	.059	17	.84		.06
C6. Use of long term (one year+) performance indicators							.42	.084	15	.97		.036

Training practices. In general, the similarity measures between parent and subsidiary emphasis on training and development exhibit negative relationships with the coercive isomorphic pressures indicated by control through budget, control through goal setting, control through task and structural independence, and mimetic and normative isomorphic pressure. The negative relationship indicates that as isomorphic pressure on the subsidiary increase, training and development practices between the parent and the subsidiary become more similar.

Use of in-house classroom training. In multi-national firms where the parent places strong emphasis on the use of in-house classroom training (F1), there is a relationship between the similarity of emphasis between the parent and subsidiary and control by budgeting. As this relationship is negative, when control by the parent of the subsidiary's budgeting policy and personnel practices increases, so too does the similarity between the parent and the subsidiary's emphasis on the use of in-house classroom training (F1).

Use of outside (external) classroom training. Where strongly emphasized in the parent headquarters, the use of external classroom training (F3) demonstrates significant and negative relationships with control through task. This indicates that as the composite representing the subsidiary's task and structural dependence increases, so too does the similarity between the parent and subsidiary emphasis on the use of the use of external classroom training (F3).

Use of technical knowledge training. In examining the similarity between parent and subsidiary emphasis on the use of technical knowledge training (F6), similarity in parent and subsidiary emphasis on this practice indicates statistically significant relationships with isomorphic pressures in the form of control through budgeting, control by ends, structural interdependence, and normative and mimetic

isomorphism. In general, as isomorphic pressure increases so too does the similarity between parent and subsidiary emphasis on this practice.

Use of general problem solving training. In multi-national firms where the parent places great emphasis on the use of general problem solving training (F7), the similarity between parent and subsidiary emphasis on this practice demonstrates a significant and negative relationship with isomorphic composites representing control by ends, general coercive pressure by the parent on the subsidiary, and mimetic isomorphic pressure. These negative relationships indicate that as the isomorphic pressure on the subsidiary increases, the parent and subsidiary emphasis on general problem solving training become more similar.

Use of interpersonal skills training. In the case of different scores between parent and subsidiary emphasis on the use of interpersonal skills training (F8), there are significant relationships between the similarity measures and control by ends. The similarity measure for the emphasis on the use of interpersonal skills training in the parent and the subsidiary, demonstrates a negative relationship with control by ends, suggesting that as these isomorphic pressures increase, the emphases of the parent and the subsidiary on the use of interpersonal skills training (F8) become more similar.

In summary, the only isomorphic pressure that has any effect on recruiting is normative pressure, and even this sometimes results in practice differences rather than in similarity. On the other hand, performance appraisal is affected by all types of isomorphic pressure, as is training. In each training and performance appraisal, two individual practices are affected by both budget and normative isomorphism concurrently:

- C2. Use of informal systems of appraisal
- C6. Use of long term (one year+) performance indicators
- F6. Use of technical knowledge training
- F11. Use of entry level training for employees.

Table 13.3
Fitted regression models in which similarity in parent-subsidiary emphasis on training practices is predicted
by isomorphic pressure composites,
controlling for firm size, industry, firm age and length of time the subsidiary has been in Japan

TRAINING	PARAMETER ESTIMATES							Int- cpt	r2	p	dfe	Tol.	F test p
	BUDGT	ENDS	TASK	NORM	MIMET								
F1. Use of in-house classroom training	-.24						.67	.30	.011	25	.96	.53	
F4. Use of individual development plans					-.22		1.15	.20	.097	21	.95	.47	
F6. Use of technical knowledge training	-.02						.52	.17	.084	27	.98	.32	
F6. Use of technical knowledge training		-.07					.51	.24	.03	25	.88	.09	
F6. Use of technical knowledge training				-.004			.50	.17	.092	25	.95	.035	
F6. Use of technical knowledge training					-.11		.53	.24	.030	25	.99	.029	
F8. Use of interpersonal skills training		-.17					.82	.27	.045	20	.86	.75	

Relative strength of isomorphic pressure composites as predictors of similarity in practice emphasis.

In this section, I examine the effect sizes of the isomorphic pressure composites on two selected practice emphasis difference scores to determine which isomorphic pressure composites best predict similarity in practice emphasis relative to each other. These isomorphic pressures include: control by the parent of the subsidiary through budgeting, control through goal setting, control through functional task interdependence, control through socialization and representation, and mimetic isomorphism. To control for variability due to practices, I compare the isomorphic pressures along practices related to all five isomorphic pressures. The two practices selected for this comparison are: the use of long term (one year+) performance indicators in performance appraisal (C6) and the use of technical knowledge training (F6). In both cases, the isomorphic pressures most strongly related to *parent-subsidiary similarity in the emphasis of these two practices* is control through goal setting.¹⁷⁵ This suggests that where the parent firms set specific targets or goals for sales growth rates, market share, operating profits, ROI contribution to consolidated profits, contribution to overall strategic positioning, market development, cost reduction and new product development, and absenteeism for employees in the subsidiary, parent and subsidiary emphasis on the use of long term (one year+) performance indicators in performance appraisal (C6) and the use of technical knowledge training (F6) become more similar. The Pearson correlation coefficients below capture the effect sizes to illustrate this.

¹⁷⁵Control through task has a stronger effect on the use of long term (one year+) performance indicators in performance appraisal (C6), but the effect of the pressure is positive, indicating that as the pressure increases, the parent and subsidiary emphasis on on the use of long term (one year+) performance indicators in performance appraisal (C6) become more different.

Table 13.4
 Pearson correlation coefficients for isomorphic pressures and parent and subsidiary emphasis on the use of long term (one year+) performance indicators in performance appraisal (C6), and the use of technical knowledge training (F6)

Practice	BUDG41	ENDS41	TASK41	NORM41	MIMET41
DIFSC6. Use of long term (one year+) performance indicators in performance appraisal (n=26)	-0.36	-0.31	0.54	-0.26	-0.12
p	(0.092)	(0.128)	(0.004)	(0.194)	(0.552)
DIFSF6. Use of technical knowledge training	-0.18	-0.39	0.15	-0.35	-0.39
p	(0.245)	(0.010)	(0.319)	(0.021)	(0.011)
n	43	43	43	43	42

Disconfirming results.

Several practices, particularly recruiting, demonstrate positive relationships with parental control, indicating that even as parental control increases across the population, the emphasis on these practice decreases. The following section outlines these practices and gives possible explanations for their being counter to expectation.

Recruiting. The positive relationship here between parental control and recruiting emphasis difference scores, with increases in parental control across the population related to increased differences in emphasis, suggest that none of the recruiting practices are responsive to any kind of parental control, in that recruiting practices show no significant relationships in this sample to parental pressure through budgeting, goal-setting, or socialization of subsidiary managers. This suggests that recruiting is likely to be responsive across all practices in that the recruiting practices of these American manufacturers in Japan are very similar to those of large Japanese manufacturers.¹⁷⁶

Performance appraisal. In the case of the relationship between coercive isomorphism through task and structural independence, and the emphasis on the use of long term performance indicators, the positive relationship indicates that as the subsidiary is more integrated into the parent firm its emphasis on the use of long term indicators diverges from that of the parent. One reason for this may be that, on average, the use of long term indicators in subsidiaries with parents strongly emphasizing that practice is estimated to be about 5.65 on a scale from 0 to 7, whereas in the parent firm the emphasis on the use of long term performance indicators in those firms that strongly emphasize it is only 5.42. Because subsidiaries emphasize the use of long term performance indicators more than do their parents in most cases where

¹⁷⁶See literature review of Japanese recruiting practices. This may be confirmed by comparing recruiting practices of American manufacturers in Japan to those of Japanese manufacturers, controlling for firm size, industry, and technology.

the parent strongly emphasizes it, it makes sense that even as the parent exerts pressure through task interdependence the subsidiary may emphasize the practice to such a greater extent than the parent as to diverge from the parent's practice.

Use of trait measurement system. Finally, with regard to the use of trait measurement systems (C10), when strongly emphasized in the parent, the difference score between parent and subsidiary emphasis on this practice is significant and positively related to control through ends or goals. Thus, as control through goal setting on various performance measures increases, the more the parent and subsidiary emphasis on use of trait measurement systems in performance appraisal diverges.

Training: Technical knowledge training. The composite representing control through task and structural independence has a positive relationship to the similarity between parent and subsidiary emphasis on the use of technical knowledge training (F6). The greater interdependence between the parent and subsidiary results in greater divergence in the emphasis on creativity and enhancement training. It may just be that the subsidiary emphasizes creativity enhancement training to a much greater extent than does the parent. This is supported by the fact that in multi-national firms where the parent strongly emphasizes the use of creativity enhancement training, parent firms in this sample on average placed a 4.94 emphasis on this type of training while subsidiary firms only placed a 4.39 emphasis on a scale of 0 to 7.

Table 13.5
Fitted regression models in which similarity in parent-subsubsidiary emphasis on recruiting practices is predicted by isomorphic pressure composites, controlling for firm size, industry, firm age and length of time the subsidiary has been in Japan

Recruiting	BUDG	ENDS	TASK	NORM	MIM	Intcpt	R2	p	DFE	Tol.
B3. Use of recruitment from within (post job openings within company)			.26			1.05	.25	.056	20	.96
B4. Use of objective skill ability tests		.30				.34	.46	.009	15	.78
B8. Recruitment from certain schools only				.56		.79	.86	.019	4	.92

Table 13.6
Fitted regression models in which similarity in parent-subsubsidiary emphasis on performance appraisal practices is predicted by isomorphic pressure composites, controlling for firm size, industry, firm age and length of time the subsidiary has been in Japan

PERFORMANCE APPRAISAL PRACTICE	BUDG	ENDS	TASK	NORM	MIMET	Intcpt	r²	p	dfe	Tol.
C5. Use of self-assessment evaluations		.31				1.06	.31	.072	14	.85
C6. Use of long term performance indicators		.02				.38	.27	.089	15	.80
C6. Use of long term performance indicators			.02			.40	.27	.090	15	.81
C6. Use of long term performance indicators					.02	.39	.27	.089	15	.99
C7. Use of multiple measures of performance		.14				.34	.32	.026	19	.88
C8. Use of management by objectives systems					.21	.68	.22	.063	22	.97
C10. Use of trait measurement system		.29				.54	.73	.0008	11	.92

Table 13.7
Fitted regression models in which similarity in parent-subsubsidiary emphasis on training practices is predicted by isomorphic pressure composites, controlling for firm size, industry, firm age and length of time the subsidiary has been in Japan

TRAINING	BUDG	ENDS	TASK	NORM	MIMET	Intcpt	r2	p	dfe	Tol.
F2. Use of informal coaching by supervisors				.26		.53	.23	.060	21	.89
F6. Use of technical knowledge training			.07			.49	.20	.058	25	.93
F8. Use of interpersonal skills training				.19		.60	.21	.097	20	.89
F10. Use of formal mentoring programs				.38		.58	.48	.013	13	.79

Chapter 14: Implications and conclusions.

This thesis began by outlining how multinational firms experience often conflicting pulls toward local responsiveness and global integration in their various businesses, functions, and tasks within functions (Bartlett and Ghoshal, 1989). This thesis advances this premise one more step by proposing that there needs to be an integration/ responsiveness balance at the level of routines within tasks. Just as businesses, functions, and tasks fall along a spectrum between local responsiveness and global integration, so too do routines within tasks spread themselves along this continuum.

Isomorphic pressures act on the firm at the level of routines. Firm characteristics are replicated when firms reproduce routines, even when they do so unconsciously. On one hand, parent firms exert pressures on the subsidiary for replication of parent practices toward global integration. On the other hand, organizations in the host country environment, such as customers, suppliers, competitors, and host country governments exert pressures on the subsidiary to replicate local practices. This thesis represents a first attempt at identifying routines as they cluster in response to pressures towards local responsiveness and pressures toward global integration. I propose that there are general personnel practices that apply across industries in manufacturing, toward integrating the subsidiary to the parent firm's goals or toward making the subsidiary more locally responsive.¹⁷⁷ It is

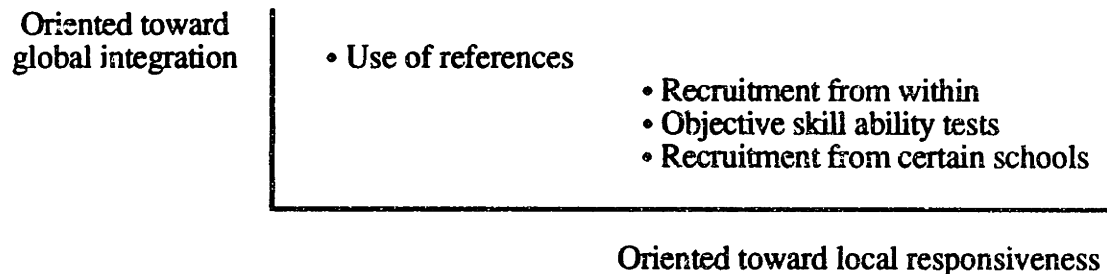
¹⁷⁷Of course, personnel practices are closely tied to the technologies of the corporations in which they are practiced. However, certain personnel practices, such as recruiting, draw from the same labor pool across industries, so that very similar practices are likely to occur across manufacturers, regardless of technology. Further, the manufacturers in this sample represent industries with similar rates of technological change.

these practices that this thesis focuses on that are generally acknowledged to be relevant to the majority of the firms in this sample.

Recruiting. The data here suggest that recruiting is not responsive to any parental control or coordination mechanisms, in that recruiting practices showed no significant relationships in this sample to parental pressure through budgeting, goal-setting, or socialization of subsidiary managers. This suggests that recruiting is likely to be responsive across all practices in that the recruiting practices of these American manufacturers in Japan are very similar to those of large Japanese manufacturers.¹⁷⁸

Figure 14.1

Integration and differentiation orientation with regard to recruiting



Recruiting is appropriately locally responsive in that American firms in Japan are competing with Japanese firms for the same employees. Thus, in order to attract competent, knowledgeable, and well-connected students to develop the firm's core competencies and connections with other firms in the future, foreign multinational firms in Japan would do well to adopt Japanese recruiting practices.

¹⁷⁸See literature review of Japanese recruiting practices. This may be confirmed by comparing recruiting practices of American manufacturers in Japan to those of Japanese manufacturers, controlling for firm size, industry, and technology.

Localized recruiting practices can be combined with any configuration of performance appraisal, training, or compensation and benefits. Their being locally responsive does not interfere with the alignment of any other personnel practices and does not conflict with achieving the parent's goals on the part of the subsidiary.

Future studies exploring recruiting practices of foreign multinational firms in Japan would do well to look at when the foreign firm approaches the graduating Japanese senior, how the foreign firm develops contacts with faculty in the more prestigious Japanese universities, how the foreign firm advertises itself to graduating students, the number and content of interviews, the follow-up process after interviewing entering employees, as well as various mid-career recruiting practices. These mid-career recruiting practices might include the method of advertising the foreign firm to Japanese mid-career hires, the length of the period it generally takes to attract a mid-career recruit, the avenues the foreign firm uses in contacting the mid-career recruit, the general age of the mid-career recruit, their past employment history, i.e., if they worked for one or more firms, for a foreign firm or for a Japanese firm, and the proportion of mid-career recruits relative to other managers in the firm.

Training. The data here suggest that training practice routines provide a portfolio of activities that span the spectrum from local responsiveness to global integration. Training and performance appraisal are more complex with regard to local responsiveness and global integration than recruiting because these activities provide a means for both the parent firm to achieve firm-wide goals and the subsidiary to adapt to the local environment. Training practices that demonstrate similarity in relationship to parental control in this sample in terms of their similarity of emphasis include the use of in-house classroom training, the use of technical knowledge and interpersonal skills training, and the use of individual development plans. This thesis proposes that

similarity in the emphasis and content of these practices facilitates integration between the parent and the subsidiary. Undertaking similar practices allows for a smoother transfer of information and personnel, as well as a closer alignment of goals.

In-house training and technical and interpersonal skills training both facilitate subsidiary/parent interaction. In-house classroom training may allow the subsidiary and the parent to focus on core competencies and proprietary technologies. Technical training will keep relevant technological information flowing from subsidiary and parent activities. Keeping in mind that many of these subsidiaries undertake R&D, this technical training allows for state-of-the-art technology in Japan to be directed back to the American parent.

Finally, interpersonal skills training is likely very useful in firms employing approaches from more than one culture, here the American parent's culture and the Japanese subsidiary's culture. Thus, similarity in parent and subsidiary training in these areas is likely to align the parent and the subsidiary toward similar goals with regard to proprietary knowledge, unified technological advancement, and easier interpersonal communications.

Figure 14.2

Integration and differentiation orientation with regard to training

Oriented toward
global integration

- In-house classroom training
- Individual development plans
- Technical knowledge training
- Interpersonal skills training

- Informal coaching by supervisors
- Formal mentoring programs

Oriented toward local responsiveness

I propose that the training which contributes to aligning the parent and the subsidiary toward common goals would do well to be globally integrated. This facilitates the transfer of information between the parent and the subsidiary and vice versa, particularly from those areas of the firm which excel in certain areas and types of knowledge. To capitalize on their diverse exposure to various markets and technologies, multinational firms might do well to establish systems through which "centers of excellence"--subsidiaries outstanding in a given technology, function, market expertise--can pass this knowledge on to other subsidiaries.

Training also provides global integration when it brings together managers from diverse geographical locations, related technologies, or interconnected tasks. Matsushita and Itochu training has shown that one of the greatest benefits of training is the establishment of networks across subsidiaries between subsidiary managers. Week-long training sessions allow for the exchange of ideas, the development of working relations between managers, and the exposure of subsidiary managers to the broad range of customers, competitors, suppliers, and problems facing the firm in different locales and on different product dimensions.

Other training practices serve the subsidiary better by responding to local needs and pressures. These training practices in this sample include the use of informal coaching by supervisors and the use of formal mentoring programs. Of course, in the Japanese environment, in order to compete with Japanese firms to keep employees, American firms must provide in-house education. In the United States skills enhancement is often obtained through MBA courses or technical graduate degree programs. In Japan, technical and other skills improvement is generally obtained within the firm. Thus, in order for American firms to compete with Japanese firms in maintaining employee count and further developing employees, American firms would

do well to provide in-house training in the areas related to functions, interpersonal skills, and technology.

Because the Japanese labor force is inclined toward low mobility among firms, it is possible that providing training will encourage employees to stay in the firm rather than defecting and looking for employment in other firms. In addition, training has the benefits of maximizing employee productivity and improving employee commitment and morale. Localized training also allows the foreign firm to keep abreast of Japanese technological advancement, Japanese customer taste, and Japanese business practices.

Future studies of training in foreign firms might do well to look at entry-level training, mid-career training, specific functional training, training upon promotion at every level of management, and international training prior to rotation of subsidiary management through the headquarters. Dow is considering having newly hired Japanese employees sent to the United States for one or two years for training in the headquarters so that they can better integrate parent and subsidiary practices over the course of their careers. Dow's head of personnel advocates that these employees be sent to the United States as early as possible while they are still mobile and eager to travel, and before they have families and mortgages.

Performance appraisal. Like training, performance appraisal is a complex activity that must respond to both pressures for global integration and pressures for local responsiveness. Thus, it is likely that the portfolio of practices that make up the performance appraisal task are spread along the spectrum between locally responsive and globally integrated. I would argue that the performance appraisal practices that are best aligned to parent firm practices are those that integrate subsidiary manager behavior in keeping with parent firm goals for the firm as a whole. This sample

shows that the use of long-term performance indicators is significantly related to parental control through budgeting and through socialization of the subsidiary managers and representation by headquarters management in the subsidiary.

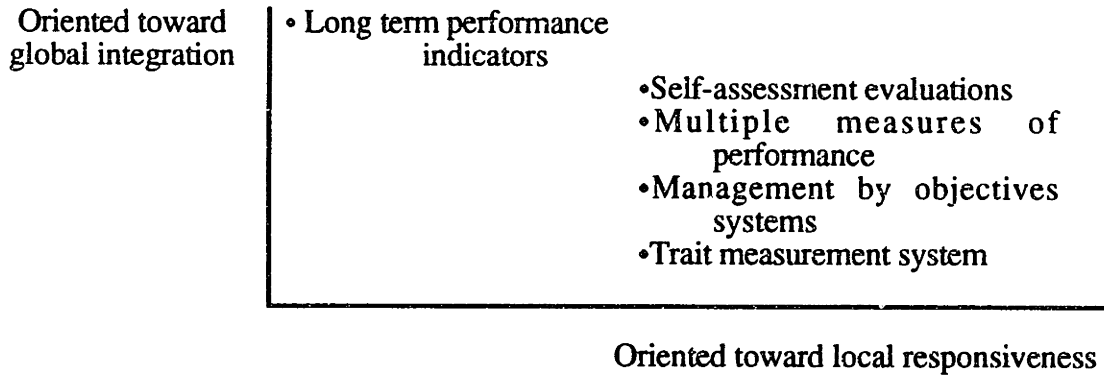
Maintaining similar performance appraisal practices in the subsidiary and the parent facilitates the comparison of parent and subsidiary behavior, as well as parent and subsidiary performance and results. Performance appraisal practices that would do well to be integrated between the parent and the subsidiary include those practices which contribute to overall firm goals, including contribution to consolidated firm profits, as well as more intangible performance areas such as facilitating the flow of information between the parent and subsidiary and between the Japanese subsidiary and other subsidiaries, and encouraging firm-wide learning.

The portfolio of performance appraisal practices that should be globally integrated depends to a large extent on the type of firm employing these practices. For the global and international type firms, coordination is more strongly emphasized than is local responsiveness in the subsidiary. Thus, these types of firms are more likely to demonstrate more performance appraisal practices along the spectrum in the direction of global integration. Firms in the multinational category with highly autonomous subsidiaries on the other hand, are more likely to support subsidiaries tending toward local responsiveness.

Future studies would do well to look at performance appraisal along the dimensions of the frequency of the appraisal, who generally performs the appraisal (the employee's direct superior or the personnel department), the method of storing the appraisal, whether it's stored in a large database, and how frequently the content of the performance appraisal changes or has changed in the firm.

Figure 14.3

Integration and differentiation orientation with regard to performance appraisal



Future research on personnel practices in MNEs. This study looked at American multinational firms which generally fall into under Bartlett and Ghoshal's heading of "international" firms. It would be interesting to see how multinational (European) firms and global (Japanese) firms configure their practices as they have different configurations of local responsiveness and global integration. I would hypothesize that global firms would be high on global integration and very low on local responsiveness, even on tasks such as recruiting. On the other hand, multinational firms are likely to be high on local responsiveness and low on global integration, configuring more routines toward the subsidiary's needs for local responsiveness.

BIBLIOGRAPHY

- Abegglen, James (1958), The Japanese Factory. The Free Press, Glencoe, Ill.
- Abolafia, M.L. and Kilduff, M. (1988), "Enacting Market Crisis: The Social Construction of a Speculative Bubble", Administrative Science Quarterly, 33:2, pp. 177-193.
- Affifi, A. A. and Virginia Clark. (1990). Computer-aided Multivariate Analysis. Van Nostrand Reinhold.
- Aharoni, Y. (1960). The Foreign Investment Decision Process, Boston, Mass:
- Aldrich, Howard E. (1972). "An organization-environment perspective on cooperation and conflict in the manpower training system", in Rosemary C. Sarri and Yeheskel Hasenfeld, eds. The Management of Human Services. New York: Columbia University Press.
- Aldrich, Howard E. (1976). "Resource Dependence and Interorganizational Relations: Relations Between Local Employment Service Offices and Social Service Sector Organizations." Administration and Society, 7, pp. 419-54.
- Aldrich, Howard E. (1979). Organizations and Environments, Englewood Cliffs, NJ: Prentice-Hall.
- Aldrich, Howard E., and Marsden, P.V. (1988). "Environments and Organizations", in Neil J. Smelser (ed.), Handbook of Sociology, Newbury Park, CA: Sage Publications, Inc., pp. 361-92.
- Aldrich, Howard E. and Pfeffer, J. (1976). "Environments of Organizations", Annual Review of Sociology, 2, pp. 79-105.
- Aldrich, Howard E. and Whetten, D. (1981). "Organization-Sets, Action-Sets, and Networks: Making the Most of Simplicity", in P.C. Nystrom and W.H. Starbuck (eds.) Handbook of Organizational Design, London: Oxford University Press, pp. 385-408.
- Aldrich, H., McKelvey, W., & Ulrich, D. (1984). Design strategy from the population ecology perspective. Journal of Management, 10: 67-86.
- Allen, T.J. (1978). Managing the Flow of Technology: Technology Transfer and the Dissemination of Technological Information within the Research and Development Organization, Cambridge, Mass: MIT Press.
- Allen, T. J., & Cohen, S. (1969). Information flow in R&D laboratories. Administrative Science Quarterly, 14: 12-19.
- Allen, Thomas and Valentine Reilly. (1973). Getting the World Around--Report of the Pilot Study on Technology Transfer to Irish Industry. Working Paper 650-73, Sloan School of Management, M.I.T. 1973.

- Anderson, C. R., Hellriegel, D., & Slocum, J. W. 1977. Managerial response to environmentally induced stress. Academy of Management Journal, 20: 260-272.
- Anderson, E. and Coughlan, A.T. (1987). "International Market Entry and Expansion via Independent or Integrated Channels", Journal of Marketing 51, pp. 71-82.
- Anderson, E. and Gatignon, H. (1986). "Modes of Foreign Entry: A Transaction Cost Analysis and Propositions", Journal of International Business Studies, 17-3, pp. 1-26.
- Anderson, E. and Oliver, R. (1987). "Perspectives on Behavior-based versus Outcome-Based Sales force Control Systems", Journal of Marketing, 51, pp. 76-88.
- Ansoff, H.I. (1965). Corporate Strategy, an Analytic Approach to Business Policy for Growth and Expansion, New York: McGraw-Hill.
- Anthony, R. and Dearden, J. (1980). Management Control Systems, Homewood, Il: Irwin.
- Aoki, Masahiko (1988), Information, Incentives, and Bargaining in the Japanese Economy, Cambridge University Press.
- Aoki, Masahiko (ed.) 1984, The Economic Analysis of the Japanese Firm. New Holland Press, Amsterdam.
- Argyris, C. and Schon, D.A. (1978). Organizational Learning, Reading, Mass: Addison-Wesley.
- Arpan, J. S., and Ricks, D. A. (1986). "Foreign Direct Investment in the U.S., 1974-1984", Journal of International Business Studies, 17-3, pp. 149-154.
- Arrow, K.J. (1974). The Limits of Organization, New York: Norton.
- Arrow, K.J. (1985). "The Economics of Agency", in J.W. Pratt and R.J. Zeckhauser (eds.), Principal and Agents: The Structure of Business, Boston, Mass: Harvard Business School Press, pp. 37-54.
- Astley, W. Graham, and Andrew Van de Ven. (1983). Central Perspectives and Debates in Organization Theory. Administrative Science Quarterly 28:245-73.
- Astley, W. Graham. (1985). The Two Ecologies: Population and Community Perspectives on Organizational Evolution. Administrative Science Quarterly 30:224-41.
- Astley, W.G. and Van de Ven, A.H. (1983). "Central Perspectives and Debates in Organization Theory", Administrative Science Quarterly, 28, pp. 265-73.
- Bacharach, S.B. and Aiken, M. (1976). "Structural and Process Constraints on Influence in Organizations: A Level Specific Analysis", Administrative Science Quarterly, 21, pp. 623-642.

- Bahrami H. and Evans, S. (1987). "Stratocracy in High Technology Firms. Special Issue on Organizational Approaches to Strategy", California Management Review, 30:1, pp. 51-66.
- Baker, Frank, and Gregory O'Brien. 1971. Intersystems Relations and Coordination of Human Service Organizations. American Journal of Public Health 61:130-37.
- Bailyn, Lotte. (1975). "Research as a cognitive process : some thoughts on data analysis." Cambridge, Mass. : M.I.T. Alfred P. Sloan School of Management, Working paper no.801-75.
- Bailyn, Lotte. (1977). "Accommodation of work to family : an analysis of couples with two careers." Cambridge, Mass. : M.I.T. Alfred P. Sloan School of Management, Working paper ; no.905-77.
- Bailyn, Lotte. (1982). "Inner contradictions in technical careers." Cambridge, Mass.: Alfred P. Sloan School of Management, Working paper 1281-82A.
- Bailyn, Lotte. (1983). "Work and family : the context of careers. A consideration of personal issues in human resource management." Cambridge, Mass. : Alfred P. Sloan School of Management, Massachusetts Institute of Technology, Working paper (Alfred P. Sloan School of Management) WP 1406-83.
- Bailyn, Lotte. (1987). "Freeing work from the constraints of location and time : an analysis based on data from the United Kingdom." Cambridge, Mass.: Management in the 1990s, Sloan School of Management, Massachusetts Institute of Technology, Working paper 1907-87.
- Bailyn, Lotte. (1988). "Issues of gender in technical work : with particular emphasis on the use of computers to work from home in Britain and the United States." Cambridge, MA: Sloan School of Management, Massachusetts Institute of Technology, Working paper 88-060.
- Bailyn, Lotte. (1988). "Toward the perfect workplace? : the experience of home-based systems developers." Cambridge, Mass.: Sloan School of Management, Massachusetts Institute of Technology, Working paper (Management in the 1990s (Program)) 88-045/Working paper (Sloan School of Management) WP 1993-88.
- Bailyn, Lotte and Edgar H. Schein. (1974). "A taxonomy of technically based careers." Cambridge, M.I.T. Sloan School of Management, Working paper no. 754-74 .
- Bailyn, Lotte in collaboration with Edgar H. Schein. (1980). Living with technology: issues at mid-career. Cambridge, Mass. : MIT Press.
- Baliga, B. and Jaeger, A. (1984). "Multinational Corporations: Control Systems and Delegation Issues", Journal of International Business Studies, 15:3, pp. 25-40.
- Ballon, Robert. (1985). Salary Administration in Japan: "regular" Work Force. Tokyo: Sophia University Press.

- Ballon, Robert. (1986). Labor Management Relations in Japan. Tokyo: Sophia University.
- Ballon, Robert. (1988). Japan's Salary System. Tokyo: Sophia University Press.
- Ballon, Robert. (1990). The Salary System and Foreign Firms. Tokyo: Sophia University Press.
- Ballon, Robert. (1992). Foreign Competition in Japan: Human Resource Strategies. New York: Routledge.
- Bank of Japan Research Department, ed. 1959. Nihon Kin'yushi Shiryo: Meiji Taisho Hen. Vol. 13. Tokyo: Office of Printing, Ministry of Finance.
- Barley, S.R. (1983). "Semiotics and the Study of Occupational and Organizational Cultures", Administrative and Science Quarterly, 28, pp. 393-413.
- Barley, S.R., Meyer, G.W. and Gash, D.C. (1988). "Cultures of Culture: Academics, Practitioners, and the Pragmatics of normative control", Administrative Science Quarterly, 33, pp. 24-60.
- Barnard, Chester. 1938 . The Function of the Executive. Cambridge: Harvard University Press.
- Barney, J. and Ouchi, W. (1986). Organizational Economics. San Francisco: Jossey-Bass.
- Baron, James N., Frank R. Dobbin, and P. Devereaux Jennings. (1986). "War and Peace: The Evlution of Modern Personnel Administration in U. S. Industry." American Journal of Sociology 92: 350-83.
- Bartholemew, James (1989), The Formation of Science in Japan, Yale University Press, New Haven, Conn.
- Bartlett, C.A. (1979). "Multinational Structural Evolution: The Changing Decision Environment in International Divisions", unpublished doctoral dissertation, Harvard Business School.
- Bartlett, C.A. (1981). "Multinational Structural Change: Evolution Versus Reorganization", in L. Otterbeck (ed.), The Management of Headquarters-Subsidiary Relationships in Multinational Corporations. Aldershot: Gower, pp. 121-46.
- Bartlett, C.A. (1983). "MNCs: Get Off the Reorganization Merry-Go-Round", Harvard Business Review, 61:2, pp. 138-146.
- Bartlett, C. A. (1986a). Building and managing the transnational: The new organizational challenge. In M. E. Porter (Ed.), Competition in global industries: 367-404. Boston: Harvard Business School Press.
- Bartlett, C. A. (1986b). Kentucky Fried Chicken (Japan) Limited. (Case No. 9-387-043). Boston: Harvard Business School Case Services.

- Bartlett, C.A. and Ghoshal, S. (1986). "Tap Your Subsidiaries for Global Reach", Harvard Business Review, 64:6, pp. 87-94.
- Bartlett, C.A., Doz, Y. and Hedlund, G. (eds) (1990). Managing the Global Firm. London: Routledge & Kegan Paul.
- Bartlett, C.A. and Ghoshal, S. (1989). Managing Across Borders: The Transnational Solution. Boston, Mass: Harvard Business School Press.
- Bartlett, C.A. and Ghoshal, S. (1990). "Matrix Management: Not a Structure, A Frame of Mind", Harvard Business Review, 68:4, pp. 133-45.
- Barzelay, Michael, and Rogers Smith. (1987) . The One Best System? A Political Analysis of Neoclassical Institutional Perspectives on the Modern Corporation. In Corporations and Society, ed. W. Samuels and A. S. Miller, 81-110. New York: Greenwood Press.
- Bavelas, A. (1951). "Communication Patterns in Task-Oriented Groups", in D. Lerner and H.D. Lasswell (eds), The Policy Sciences. Stanford University Press, pp. 193-202.
- Becker, Gary. 1981. A Treatise on the Family. Cambridge: Harvard University Press.
- Bell, Daniel. 1973. The Coming of Post-Industrial Society. New York: Basic Books.
- Becker, Gary.. 1976. The Cultural Contradictions of Capitalism. New York: Basic Books.
- Becker, H.S. (1982). "Culture", Yale Review, 71, pp. 513-28.
- Becker, H.S. and McCall, M.M. (1990). Symbolic Interaction and Cultural Studies. University of Chicago Press.
- Beer, M. and Davis, S. (1976). "Creating a Global Organization, Failures Along the Way", Columbia Journal of World Business, 11:2, pp. 72-84.
- Bendix, Reinhard. (1956). Work and Authority in Industry. Berkeley, Ca: University of California Press.
- Bendix, Reinhard. (1968). Bureaucracy. In International Encyclopedia of the Social Sciences, ed. David L. Sills, 206-19. New York: Macmillan.
- Benedict, R. (1946). The Chrysanthemum and the Sword. University of Chicago Press.
- Benson, J.K. (1975). "The Interorganizational Network as a Political Economy", Administrative Science Quarterly, 20, pp. 229-49.
- Berger, Peter L., and Thomas Luckmann. (1967). The Social Construction of Reality. New York: Doubleday.

- Bettenhausen, K.L. and Murnighan, J.K. (1985). "The Emergence of Norms in Competitive Decision Making Groups", Administrative Science Quarterly, 30, pp. 350-72.
- Biggart, N.W. (1989). Charismatic Capitalism. University of Chicago Press.
- Blackford, Mansel G. 1988. The Rise of Modern Business in Great Britain, the United States, and Japan. Chapel Hill, NC: The University of North Carolina Press.
- Blake, J., and K. Davis. 1964. Norms, Values and Sanctions. In Handbook of Modern Sociology, ed. R. E. L. Faris, 247-79. Chicago: Rand McNally.
- Blau, P.M. (1968). "The Hierarchy of Authority in Organizations", American Sociological Review, 33, pp. 453-67.
- Blau, P.M. (1970). "A Formal Theory of Differentiation in Organizations", American Sociological Review, 35, pp. 201-18.
- Blau, P.M. and Scott, W.R. (1962). Formal Organizations. San Francisco: Chandler.
- Boddewyn, J.J. (1988). "Political Aspects of MNE Theory", Journal of International Business Studies, 19:3, pp. 341-63.
- Boulding, Kenneth. 1953. The Organizational Revolution. New York: Harper and Row.
- Bourgeois, J. (1979). "Toward a Method of Middle-Range Theorizing", Academy of Management Review, 4:3, pp. 443-47.
- Bower, J.L. (1970). Managing the Resource Allocation Process. Boston, Mass: Harvard Business School Division of Research.
- Boyacigililer, and Adler, N. (1991). "The Parochial Dinosaur: Organizational Science in a Global Context", Academy of Management Review 16-2, pp. 262-290.
- Boyd, R. and Richerson, P. (1985). Culture and the Evolutionary Process. University of Chicago Press.
- Brockner, J., Grover, S., Reed, T., DeWitt, R., and O'Malley, M. (1987). "Survivors" Reactions to Layoffs: We Get By with a Little Help for Our Friends," Administrative Science Quarterly, 32-4, pp. 526-41.
- Brooke, M. Z. and Remmers, H.L. (1970). The Strategy of Multinational Enterprise. New York: Elsevier.
- Brownell, P. 1982. The role of accounting data in performance evaluation, budgetary participation, and organizational effectiveness. Journal of Accounting Research. 20: 12-27.
- Bruns, William and John Waterhouse. (1975), "Budgetary control and organization structure." Journal Accounting Research, Autumn 1975: 177-203.

- Buchanan, B. 1974. Building organizational commitment: The socialization of managers in work organizations. Administrative Science Quarterly, 19: 533-546.
- Buckley, P. J. (1988). "The Limits of Explanation - Testing the Internalization Theory of the Multinational Enterprises", Journal of International Business Studies 19, pp. 181-193.
- Buckley, P.J. and Casson, M. (1976). The Future of the Multinational Enterprise. London: Macmillan.
- Buckley, P.J. and Casson, M. (1986). The Economic Theory of the Multinational Enterprise. London: Macmillan.
- Buckley, Walter. 1967. Sociology and Modern Systems Theory. Englewood Cliffs, N.J.: Prentice-Hall.
- Budner, S. 1962. Intolerance of ambiguity as a personality variable. Journal of Personality, 30: 29-50.
- Burns, Tom and Stalker, G.M. (1961). The Management of Innovation. London: Tavistock.
- Burns, Tom, and Helen Flam. (1987). The Shaping of Social Organization. Newbury Park, Calif.: Sage.
- Buroway, M. (1979). Manufacturing Consent. University of Chicago Press.
- Buroway, Michael. (1983). Between the Labor Process and the State: The Changing Face of Factory Regimes under Advanced Capitalism. American Sociological Review 48:587-605.
- Burt, R.S. (1978). "Stratification and Prestige Among Elite Experts in Mathematical Sociology Circa 1975", Social Networks, 1, pp. 105-58.
- Burt, R.S. (1987). "Social Contagion and Innovation: Cohesion Versus Structural Equivalence", American Journal of Sociology, 92, pp. 1287-335.
- Burt, R.S., Minor, M.J. and Associates (ed) (1983). Applied Network Analysis: A Methodological Introduction. Beverly Hills, Ca: Sage.
- Burt, Ronald (1983). Corporate Profits and Cooptation. New York: Academic Press.
- Calvet, A.L. (1981) "A Synthesis of Foreign Direct Investment Theories and Theories of the Multinational Firm", Journal of International Business Studies
- Camic, Charles. 1986. The Matter of Habit. American Journal of Sociology 91(5):1039-87.
- Camic, Charles. 1989 . Structure after 50 Years: The Anatomy of a Charter. American Journal of Sociology 95(1):38-107.

- Cantwell, J. (1989). Technological Innovations and Multinational Corporations. Cambridge, Mass: Basil Blackwell.
- Capon, N., Christodoulou, C., Farley, J.U. and Hulbert, J.M. 1987. "A Comparative Analysis of the Strategy and Structure of United States and Australian Corporations", Journal of International Business Studies, 8, pp. 51-74.
- Carroll, Glenn R. (1983). A Stochastic Model of Organizational Mortality: Review and Reanalysis. Social Science Research 12:303-29.
- Carroll, Glenn R. (1984). Organizational Ecology. Annual Review of Sociology 10:71-93.
- Carroll, Glenn R. (1984). "The Specialist Strategy", California Management Review 3, pp. 126-137.
- Carroll, Glenn R. (1987). Publish and Perish: The Organizational Ecology of Newspaper Foundings. Greenwich, Conn.: JAI Press.
- Carroll, Glenn R. (ed.) (1988). Ecological Models of Organizations. Cambridge, Mass: Ballinger.
- Carroll, Glenn R., and Yang chung Paul Huo. (1986). Organizational Task and Institutional Environments in Ecological Perspective: Findings from the Local Newspaper Industry. American Journal of Sociology 91:838-73.
- Carroll, Glenn R., Delacroix, J. and Goodstein, J. (1988). "The Political Environments of Organizations: An Ecological View", in B. M. Staw and L. L. Cummings (eds.), Research in Organizational Behavior Vol. 10, pp. 359-392. Greenwich: JAI.
- Carroll, Glenn R., Jerry Goodstein, and Antal Gyenes. 1988. Organizations and the State: Effects of the Institutional Environment on Agricultural Cooperatives in Hungary. Administrative Science Quarterly 33(2):233-56.
- Carroll, Stephen. (1983). Human Resources Management in the 1980s. Washington, D.C.: Bureau of National Affairs.
- Carroll, Stephen. (1982). Performance Appraisal and Review Systems: the Identification, Measurement, and Development of Performance in Organizations. Glenview, Ill.: Scott Foresman.
- Carroll, Stephen and Henry Tosi. (1982). Management. New York: Wiley.
- Carroll, Stephen. (1977). Organizational Behavior. Chicago: St. Clair Press.
- Casson, M. (1987). The Firm and the Market. Cambridge, Mass: MIT Press.
- Caves, R.E. (1971). "International Corporations: The Industrial Economics of Foreign Direct Investment", Economica, 38, pp. 1-27.

- Caves, R.E. (1982). Multinational Enterprise and Economic Analysis. Cambridge University Press.
- Caves, R.E. and Mehra, K. (1986). "Entry of Foreign Multinationals into U.S. Manufacturing Industries", in Porter, M.E. (ed.) Competition in Global Industries, pp. 449-482. Boston, Mass: Harvard Business School Press.
- Caves, Richard E., and Masu Uekusa. 1976. Industrial Organization in Japan. Washington, D.C.: Brookings Institute.
- Chandler, Jr., Alfred D. (1962). Strategy and Structure: Chapters in the History of the American Industrial Enterprise. Cambridge, Mass: The MIT Press.
- Chandler, Jr., Alfred D. (1972). Strategy and Structure: Chapters in the History of the American Industrial Enterprise. Cambridge, MA: MIT Press.
- Chandler, Jr., Alfred D. (1977). The Visible Hand: The Managerial Revolution in American Business. Cambridge, Mass: Harvard University Press.
- Chandler, Jr., Alfred D. (1986). "The Evolution of Modern Global Competition", in M.E. Porter (ed.) Competition in Global Industries. Boston. Mass: Harvard Business School Press, pp. 405-48.
- Chandler, Jr., Alfred D. (1990). Scale and Scope: The Dynamics of Industrial Capitalism. Cambridge, Mass: Harvard University.
- Chandler, Jr., Alfred D. and Daems, Herman (eds) (1980). Managerial Hierarchies: Comparative Perspectives on the Rise of the Modern Industrial Enterprise. Cambridge, Mass: Harvard University Press.
- Chandler, Jr., Alfred D., and Herman Daems, eds. 1980. Managerial Hierarchies: Comparative Perspectives on the Rise of Modern Industrial Enterprise. Cambridge, MA: Harvard University Press.
- Child, John. (1972). Organization Structure, Environment and Performance: The Role of Strategic Choice. Sociology 6: 1-22.
- Child, John. (1973). "Strategies of Control and Organizational Behavior", Administrative Science Quarterly, 18, pp. 1-17.
- Child, J. 1975. Managerial and organizational factors associated with company performance:, Part II--contingency analysis. Journal of Management Studies. 12: 12-28.
- Child, John, and Alfred Kieser. (1981). Development of Organizations over Time. In Handbook of Organizational Design, ed. P. C. Nystrom and W. H. Starbuck, 28-64. New York: Oxford University Press.
- Clark, Rodney (1979), The Japanese Company, Yale University Press, New Haven.
- Clifford, J. (1988). The Predicament of Culture. Cambridge, Mass: Harvard University Press.

- Cohen, Michael D., James G. March, and Johan P. Olsen. 1972. A Garbage Can Model of Organizational Choice. Administrative Science Quarterly 17:1-25.
- Cole, Robert E. (1978). "The Late-Developer Hypothesis: An Evaluation of its Relevance for Japanese Employment Patterns", Journal of Japanese Studies 4-2, pp. 247-65.
- Cole, Robert E. (1983). "The Macropolitics of Organizational Change: A Comparative Analysis of the Spread of Small Group Activities." Administrative Science Quarterly 30(4): 560-85.
- Cole, Robert E. (1989). Strategies for Learning: Small-Group Activities in American, Japanese, and Swedish Industry. Berkeley: University of California Press.
- Coleman, J.S. (1966). "Foundations for a Theory of Collective Decisions", American Journal of Sociology, 71, pp. 615-27.
- Commission on the History of Science and Technology Policy (1991), Historical Review of Japanese Science and Technology Policy. Society of Non-traditional Technology, Tokyo.
- Comstak, D. E., & Scott, W. R. 1977. Technology and the structure of subunits. Administrative Science Quarterly, 22: 177-202.
- Contractor, F.J. and Lorange, P. (1988). Cooperative Strategies in International Business. Lexington, Mass: Lexington Books.
- Cook, K.S. (1977). "Exchange and Power in Networks of Interorganizational Relations", Sociological Quarterly, 18, pp. 62-82.
- Cook, K.S., Emerson, R.M., Gilmore, M.R. and Yamashigi, T. (1983). "The Distribution of Power in Exchange Networks: Theory and Experimental Results", American Journal of Sociology, 89, pp. 275-305.
- Creighton, Andrew L. 1990. The Emergence of Incorporation as a Legal Form for Organizations. Ph.D. Dissertation, Department of Sociology, Stanford University.
- Crozier, M. (1964). The Bureaucratic Phenomenon. University of Chicago Press.
- Crozier, M. and Friedberg, E. (1980). Actors and Systems: The Politics of Collective Action. University of Chicago Press.
- Cvar, M. R. (1986). "Case Study in Global Competition: Patterns of Success and Failure", in M. E. Porter (ed.), Competition in Global Industries, Boston: Harvard Business School Press, pp. 483-515.
- Cyert, R.M., and March, J.G. (1963). A Behavioral Theory of the Firm. Englewood Cliffs, NJ: Prentice Hall.
- Daft, R. L. and Lengel, R. H. (1986). "Organizational Information Requirements, Media Richness and Structural Design", Management Science, 32:5, pp. 554-571.

- Daft, R. L. and Macintosh, N.B. (1981). "A Tentative Exploration Into the Amount and Equivocality of Information Processing in Organizational Work Units", Administrative Science Quarterly, 26:2, pp. 207-24.
- Daft, R. L. and Weick, K. E. (1989). "Toward a Model of Organizations as Interpretation Systems", Academy of Management Review, 9:3, pp. 284-95.
- Dahl, R. (1957). "The Concept of Power", Behavioral Science, 2, pp. 201-15.
- Dainippon Teikoku Tokei Nenkan* (Japan Statistical Annual). 1882-1941 editions. Annual. Statistics Bureau, Prime Minister's Office.
- Daniels, J.D., Pitts, R. A. and Tretter, M. J. (1984). "Strategy and Structure of U.S. Multinationals: An Exploratory Study", Academy of Management Journal, 27:2, pp. 292-307.
- Daniels, J.D., Pitts, R. A. and Tretter, M. J. (1985). "Organizing for Dual Strategies of Product Diversity and International Expansion", Strategic Management Journal, 6, pp. 223-37.
- Davidson, D. (1989). Corporate Culture and Organizational Effectiveness. San Francisco: Jossey-Bass.
- Davidson, W. H. (1980). "The Location of Foreign Direct Investment Activity: Country Characteristics and Experience Effects", Journal of International Business Studies 12, pp. 9-22.
- Davidson, W.H. (1976). "Patterns of Factor-saving Innovation in the Industrialized World", European Economic Review, 8, pp. 207-17.
- Davidson, W.H. and Haspeslagh, P. (1982). "Shaping a Global Product Organization", Harvard Business Review, pp. 125-32.
- Davis, S. (1974). "Two Models of Organization: Unity of Command vs. Balance of Power", Sloan Management Review, 16:1, pp. 29-40.
- Davis, S. and Lawrence, P.R. (1977). Matrix. Reading, Mass: Addison-Wesley.
- Deal, T.E. and Kennedy, A.A. (1982). Corporate Cultures. Reading, Mass: Addison-Wesley.
- Delacroix, J. and Carroll, G. (1983). "Organizational Foundings: An Ecological Study of the Newspaper Industries of Argentina and Ireland", Administrative Science Quarterly, 28, pp. 274-91.
- Delacroix, J., Swaminathan, A. and Solt, M.E. (1989). "Density Dependence versus Population Dynamics: An Ecological Study of Failings in the California Wine Industry", American Sociological Review, 54, pp. 245-62.
- Demsetz, H. (1988). "The Theory of the Firm Revisited", Journal of Law, Economics, and Organization, 4:1, pp. 141-61.

- Demski, J., & Feltham, G. 1978. Economic incentives in budgetary control systems. Accounting Review, 53: 336-359.
- Derian, Jean-Claude (1990). America's Struggle for Leadership in Technology. MIT Press, Cambridge, Mass.
- Deutsch, K. (1966). The Nerves of Government: Models of Political Communication and Control. New York: Free Press.
- Deyo, Frederic C., ed. 1987. The Political Economy of the New Asian Industrialism. Ithaca, NY: Cornell University Press.
- DiMaggio, Paul J. (1986a). "Structural Analysis of Organizational Fields: A Blockmodel Approach", Research in Organizational Behavior, 8, pp. 335-70.
- DiMaggio, Paul J. (1986b). Support for the Arts from Private Foundations . In Nonprofit Enterprise in the Arts, ed. Paul DiMaggio, 113-39. New York: Oxford University Press.
- DiMaggio, Paul J. (1988a). "Interest and Agency in Institutional Theory", in Lynne G. Zucker, ed., Institutional Patterns and Organizations: Culture and Environment. Cambridge, Mass: Ballinger.
- DiMaggio, Paul J. (1988b). Progressivism in the Arts. Society 25:70-75.
- DiMaggio, Paul J. (1990). "Cultural Aspects of Economic Action", in R. Friedland and A.F. Robertson (eds.) Beyond the Marketplace. Chicago, Il: Aldine.
- DiMaggio, Paul J. and Powell, Walter W. (1983), "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields." American Sociological Review, 35: 147-60.
- DiMaggio, Paul J. and Powell, Walter W. (1991). The New Institutionalism in Organizational Analysis. University of Chicago Press.
- Dobbin, F.R., Edelman, L., Meyer, J.W., Scott, W.R. and Swidler, A. (1988). "The Expansion of Due Process in Organizations", in L.G. Zucker (ed.), Institutional Patterns and Organizations: Culture and Environment. Cambridge, Mass: Ballinger.
- Dobbin, Frank R. (1986). The Institutionalization of the State: Industrial Policy in Britain, France, and the United States. Ph.D. diss., Stanford University.
- Dodwell Marketing Consultants, comp. 1984. Industrial Groupings in Japan. Rev. ed. Tokyo: Dodwell.
- Donnellon, A., Gray, B. and Bougon, M.G. (1985). "Communication, Meaning, and Organized Action", Administrative Science Quarterly, 31, pp. 43-55.
- Dore, Ronald P. (1973). British Factory Japanese Factory. Berkeley: University of California Press.

- Dore, Ronald P. (1973). "The Late Development Effect." Chapter 4, pp. 65-80 in Modernization in South-East Asia, edited by Hans-Dieter Evers. Singapore: Oxford University Press.
- Dore, Ronald P. (1976). The Diploma Disease: Education, Qualifications and Development. Berkeley: University of California Press.
- Dore, Ronald P. (1979). "More About Late Development." Journal of Japanese Studies 5(1): 137-51.
- Dore, Ronald P. (1983). "Goodwill and the Spirit of Market Capitalism." British Journal of Sociology, 34:4, pp. 459-82.
- Dore, Ronald P. (1986). Structural Adjustment in Japan, 1970-82. Geneva: International Labour Office.
- Dore, Ronald P. (1987). Taking Japan Seriously. Stanford University Press.
- Dore, Ronald P. (1988). Taking Japan Seriously: A Confucian Perspective on Leading Economic Issues. Athlone Press, London.
- Dorfman, A. and Mitterlart, A. (1975). How to Read Donald Duck. New York: International General.
- Dornbusch, Sanford, M., and W. Richard Scott. 1975. Evaluation and the Exercise of Authority. San Francisco: Jossey-Bass.
- Douglas, Mary. 1986. How Institutions Think. Syracuse, N.Y.: Syracuse University Press.
- Dowling, John, and Jeffrey Pfeffer. 1975. Organizational Legitimacy: Social Values and Organizational Behavior. Pacific Sociological Review 18:122-36.
- Doz, Yves. L. (1976). "National Policies and Multinational Management", doctoral dissertation, Harvard Business School.
- Doz, Yves. L. (1978). "Managing Manufacturing Rationalization within Multinational Companies", Columbia Journal of World Business, 8:3, pp. 82-94.
- Doz, Yves. L. (1979). Government Control and Multinational Strategic Management: Power Systems and Telecommunications Equipment. New York: Praeger.
- Doz, Yves. L. (1980). "Strategic Management in Multinational Companies", Sloan Management Review, 21:2, pp. 27-46.
- Doz, Yves. L. (1986a). "Government Policies and Global Industries", in M. E. Porter (ed.). Competition in Global Industries, pp. 225-266. Boston: Harvard Business School Press.
- Doz, Yves. L. (1986b). Strategic Management in Multinational Companies. Oxford: Pergamon.

- Doz, Yves. L. and Prahalad, C.K. (1981). "Headquarters Influence and Strategic Control in MNCs", Sloan Management Review, 23:1, pp. 15-29.
- Doz, Yves. L. and Prahalad, C.K. (1984). "Patterns of Strategic Control in Multinational Corporations", Journal of International Business Studies, 15:2, pp. 55-72.
- Doz, Yves. L. and Prahalad, C.K. (1986). "Controlled Variety: A Challenge for Human Resource Management in the MNC", Human Resource Management, 25:1, pp. 55-72.
- Doz, Yves. L. and Prahalad, C.K. (1987). "A Process Model of Strategic Redirection in Large Complex Firms: The Case of Multinational Corporations", in A. Pettigrew (ed.) The Management of Strategic Change. Oxford: Basil Blackwell.
- Doz, Yves. L. and Prahalad, C.K. (1988). "Quality of Management: An Emerging Source of Global Competitive Advantage?", in N. Hood and J.E. Vahlne (eds.) Strategies in Global Competition. London: Croom Helm.
- Doz, Yves. L., Bartlett, C.A. and Prahalad, C.K. (1981). "Global Competitive Pressures vs. Host Country Demands: Managing Tensions in Multinational Corporations", California Management Review, 23:3, pp. 63-74.
- Doz, Yves. L., Prahalad, C.K. and Hamel, G. (1990). "Control, Change and Flexibility: The Dilemma of Transnational Collaboration", in Bartlett, Doz, and Hedlund (eds) Managing the Global Firm. London: Routledge & Kegan Paul.
- Drazin, R., & Van de Ven, A. H. 1985. Alternative forms of fit in contingency theory. Administrative Science Quarterly. 30: 514-539.
- Duncan, R.B. (1973). "Multiple Decision-making Structures in Adapting to Environmental Uncertainty: The Impact of Organizational Effectiveness", Human Relations, 26, pp. 273-91.F
- Dunning, J.H. (ed.) (1974). Economic Analysis and the Multinational Enterprise. London: Allen & Unwin.
- Dunning, J.H. (1973). "The Determinants of International Production", Oxford Economic Papers, 25:3, pp. 289-336.
- Dunning, J.H. (1977). "Trade, Location of Economic Activity and the Multinational Enterprise: A Search for an Eclectic Approach", in B. Ohlin, P.O. Hesselbom and P.J. Wiskman (eds.) The International Allocation of Economic Activity. London: Macmillan.
- Dunning, J.H. (1979). "Explaining Changing Patterns of International production: In Defence of the Eclectic Theory", Oxford Bulletin of Economics and Statistics, 41, pp. 269-96.

- Dunning, J.H. (1980a). "Explaining Changing Patterns of International Production: In Defense of the Eclectic Theory", Oxford Bulletin of Economics and Statistics, 42, pp. 269-95.
- Dunning, J.H. (1980b). "Toward and Eclectic Theory of International Production: Some Empirical Tests", Journal of International Business, 11:1, pp. 9-31.
- Dunning, J.H. (1981a). International Production and the Multinational Enterprise. London: Allen and Unwin.
- Dunning, J.H. (1981b). The Eclectic Theory of the MNC. London: Allen and Unwin.
- Dunning, J.H. (1986). Japanese Participation in British Industry: Trojan Horse or Catalyst for Growth. Dover, NH: Croom Helm.
- Dunning, J.H. (1988). Multinationals, Technology, and Competitiveness. London: Unwin Hyman.
- Dunning, J.H. (1988). "The Study of International Business: A Plea for a More Interdisciplinary Approach", Journal of International Business Studies 20-3, pp. 411-36.
- Dunning, J.H. and Pearce, J.A. (1985). Profitability and Performance of the World's Largest Industrial Companies. London: The Financial Times.
- Durkheim, Emile. (1901) 1950. The Rules of Sociological Method. Glencoe, Ill.: Free Press.
- Durkheim, Emile. (1933) 1964. The Division of Labor in Society. New York: Free Press.
- Dutton, J.E. and Jackson, S. (1987). "Categorizing Strategic Issues: Links to Organizational Action", Academy of Management Review, 12, pp. 76-90.
- Eccles, R.G. (1981). "The Quasifirm in the Construction Industry", Journal of Economic Behavior and Organization, 2, pp. 335-57.
- Eccles, R. G. 1985. The transfer pricing problem: A theory for practice. Lexington, MA: Lexington Books.
- Eccles, R.G. and Crane, D.B. (1987). "Managing Through Networks in Investment Banking", California Management Review, 30:1, pp. 176-95.
- Edelman, Lauren B. 1990. Legal Environments and Organizational Governance: The Expansion of Due Process in the American Workplace. American Journal of Sociology 95:140140.
- Edstrom, A., & Galbraith, J. R. 1977. Transfer of managers as a coordination and control strategy in multinational organizations. Administrative Science Quarterly, 22: 248-263.

- Edstrom, A. and Galbraith, J. (1979). "Transfer of Managers as a Coordination and Control Device in Multinational Organizations", Administrative Science Quarterly, 22, pp. 248-63.
- Edwards, R. C. (1979). Contested Terrain: The Transformation of the Workplace in the Twentieth Century. New York: Basic Books.
- Egelhoff, W.G. (1982). "Strategy and Structure in Multinational Corporations: An Information Processing Approach", Administrative Science Quarterly, 27:3, pp. 435-458.
- Egelhoff, W.G. (1988a). Organizing the Multinational Enterprise: An Information Processing Perspective. Cambridge, Mass: Ballinger.
- Egelhoff, W.G. (1988b). "Strategy and Structure in Multinational Corporations: A Revision of the Stopford and Wells Model", Strategic Management Journal, 9:1, pp. 1-14.
- Eisenhardt, K. (1985). "Control: Organizational and Economic Approaches", Management Science, 31, pp. 134-49.
- Eisenhardt, K. (1988). "Agency- and Institutional-Theory Explanation: The Case of Retail Sales Compensation", American Management Journal, 31:3, pp. 488-511.
- Eisenhardt, K. (1989). "Agency Theory: An Assessment and Review", Academy of Management Review, 14:1, pp. 57-74.
- Eisenstadt, Schmucl N. (1966). Modernization: Protest and Change. Englewood Cliffs, NJ: Prentice-Hall.
- Eisenstadt, Schmucl N. (1968). Social Institutions: The Concept. In International Encyclopedia of the Social Sciences, ed. D. L. Sills, 14:409-21. New York: Macmillan.
- Emerson, R.M. (1962). "Power-dependence Relations", American Sociological Review, 27, pp. 31-41.
- Emmott, B. (1989). The Sun Also Sets. New York: Simon and Schuster.
- Encarnation, Dennis J. 1983. Public Finance and Regulation of Non-Public Education: Retrospect and Prospect. In Public Dollars for Private Schools, ed. T.
- Encarnation, Dennis J. (1992). Rivals Beyond Trade: America versus Japan in Global Competition. Ithaca: Cornell University.
- Ergas, Henry (1987), "Does Technology Policy Matter?" pp. 191-245 in B.R. Guile and H. Brooks, eds., Technology and Global Industry: Companies and Nations in the World Economy, National Academy Press, Washington, DC.
- Etzioni, A. (1975). A Comparative Analysis of Complex Organizations. New York: Free Press of Glencoe.

- Etzioni, A. (1988). The Moral Dimension. New York: Free Press.
- Evan, W.M. (1967). "The Organization-Set: Toward a Theory of Interorganizational Relations", in J.D. Thompson (ed.) Approaches to Organizational Design. University of Pittsburgh Press, pp. 173-91.
- Evan, W.M. (ed.) (1976). Interorganizational Relations. Harmondsworth: Penguin.
- Evan, William M. (1966). "The Organization-Set: Toward a Theory of Interorganizational Relations." Chapter 4, pp. 173-91 in Approaches to Organizational Design, edited by James D. Thompson. Pittsburgh: University of Pittsburgh Press.
- Evans, Peter B. and Doz. Y. (1989). "The Dualistic Organization", in P. Evans, Y. Doz, and A. Laurent (eds.) Human Resource Management in International Firms. London: Macmillan.
- Evans, Peter B. (1979). Dependent Development: The Alliance of Multinational, State, and local Capital in Brazil. Princeton, NJ: Princeton University Press.
- Evans, Peter B., and John D. Stephens. (1988). "Development and the World Economy." Chapter 22, pp. 739-73 in Handbook of Sociology, edited by Neil J. Smelser. Newbury Park, CA: Sage Publications.
- Fallows, J. (1989). More Like Us. Boston, Mass: Houghton Mifflin.
- Fama, E.F. and Jensen, M.C. (1983). "Separation of Ownership and Control", Journal of Law and Economics, 26:2, pp. 301-26.
- Fararo, Thomas J., and John Skvoretz . 1986 . Action and Institution, Network and Function: The Cybernetic Concept of Social Structure. Sociological Forum 1:219-50.
- Fayerweather, J. (1978). International Business Strategy and Administration. Cambridge, Mass: Ballinger.
- Fine, G.A. (1985). "Negotiated Orders and Organizational Cultures", Annual Review of Sociology, 10, pp. 239-62.
- Fiol, C. Marlene and Lyles, M.A. (1985). "Organizational Learning", Academy of Management Review, 10, pp. 803-13.
- Flaherty, T. (1986). "Coordinating International Manufacturing and Technology", in M.E. Porter, (ed.), Competition in Global Industries, Boston, Mass: Harvard Business School Press, pp. 83-109.
- Fligstein, Neil. (1990). The Transformation of Corporate Control. Cambridge, Mass: Harvard University Press.
- Fligstein, Neil, and Kenneth Dauber. (1989). "Structural Change in Corporate Organization." Annual Review of Sociology 15: 73-96.

- Fligstein, Neil. (1985). "The Spread of the Multidivisional Form Among Large Firms, 1919-1979." American Sociological Review 50: 337-91.
- Folger, R. and Greenberg, J. (1985). "Procedural justice: An interpretative analysis of personnel systems", in K. Rowland and G. Ferris (eds.), Research in Personnel and Human Resources Management III, Greenwich, Conn: JAI Press.
- Folger, R. and Konovsky, M. (1989). "Effects of procedural and distributive justice on reactions to pay raise decisions", Academy of Management Journal, 32:1, pp.115-130.
- Fombrun, C. J. (1982). Strategies for network research in organizations. Academy of Management Review, 7: 280-291.
- Fombrun, C.J. (1983). "Attributions of Power Across Social Networks", Human Relations, 36:3, pp. 493-508.
- Ford, J. D., & Slocum, J. W. 1977. Size, technology, environment, and the structure of organizations. Academy of Management Review, 2: 561-575.
- Fouraker, L.E. and Stopford, J. (1968). "Organization Structure and Multinational Strategy", Administrative Science Quarterly, 13, pp. 57-70.
- Franko, L. G. (1974). "The Move Toward a Multidivisional Structure in European Organizations", Administrative Science Quarterly 19, pp. 493-506.
- Franko, L.G. (1976). The European Multinationals: A Renewed Challenge to American and British Big Business. Stamford, Conn: Greylock Publishing.
- Freeman, J. H. and Boeker, W. (1984). "The Ecological Analysis of Business Strategy", California Management Review, 26:3, pp. 73-86.
- Freeman, J. H. and Hannan, M.T. (1983). "Niche Width and the Dynamics of Organizational Populations", American Journal of Sociology, 88, pp. 1116-45.
- Freeman, J. H., Carroll, G. and Hannan, M.T. (1983). "The Liability of Newness: Age Dependence in Organizational Death Rates", American Sociological Review, 48, pp. 692-710.
- Freeman, L.C. (1979). "Centrality in Social Networks: Conceptual Clarification", Social Networks, 2, pp. 215-39.
- Fruin, M. (1989). Cooperative Structures, Competitive Strategies: The Japanese Enterprise System. Unpublished manuscript.
- Fryxell, G.E., and Gordon, M.E. (1989). "Workplace justice and job satisfaction as predictors of satisfaction with union and management", Academy of Management Journal 32:4, pp. 851-866.
- Fucini, J.J. and Fucini, S. (1990). Working for the Japanese: Inside Mazda's American Auto Plant. New York: Free Press.

- Fukuchi, Gen'ichiro. 1929. "Kaisha Ben." Pp. 95-110 in Meiji Bunka Zenshu, vol. 9. Tokyo: Nihon Hyoronsha.
- Fukushima, Masao. 1988. Nihon Shihonshugi no Hatten to Shiho-. Tokyo: Tokyo Daigaku Shuppankai.
- Fukutake, T. (1981). Japanese Society Today. University of Tokyo Press.
- Galbraith, J.R. (1969). "Organization Design: An Information Processing View", Working paper No. 425-69, Sloan School of Management, MIT.
- Galbraith, J.R. (1970). "Environmental and Technological Determinants of Organization Design", in J.W. Lorsch and P.R. Lawrence (eds.) Studies in Organization Design. Homewood, Ill: Irwin, pp. 113-39.
- Galbraith, J.R. (1973). Designing Complex Organizations. Reading, Mass: Addison-Wesley.
- Galbraith, J.R. (1977). Organization Design. Reading, Mass: Addison-Wesley.
- Galbraith, J.R. and Nathanson, D.A. (1978). Strategy Implementation: The Role of Structure and Process. St. Paul, Minn: West.
- Gates, S. and Egelhoff, W. (1986). "Centralization in Headquarters-subsiary Relationships", Journal of International Business Studies, 17:2, pp. 71-92.
- Geertz, C. (1973). The Interpretation of Cultures. New York: Basic Books.
- Gelsanliter, D. (1990). Jump Start: Japan comes to the Heartland. New York: Farrar, Straus, Giroux.
- Geringer, M. J., Beamish, P. W., & daCosta, R. C. 1989. Diversification strategy and internationalization: Implications for MNE performance. Strategic Management Journal, 10: 1091-19.
- Gerschenkron, Alexander. (1962). Economic Backwardness in Historical Perspective. Cambridge, Mass: Harvard University Press.
- Ghemawat, P and Spence, A.M. (1986). "Modeling Global Competition", in M.E. Porter (ed.) Competition in Global Industries. Boston, Mass: Harvard Business School Press, pp. 61-79.
- Ghoshal, S. (1986). "The Innovative Multinational: A Differentiated Network of Organizational Roles and Management Processes", unpublished doctoral dissertation, Harvard Business School.
- Ghoshal, S. (1987). "Global Strategy: An Organizing Framework", Strategic Management Journal, 8, pp. 425-40.
- Ghoshal, S., & Nohria, N. (1989). Internal differentiation within multinational corporations. Strategic Management Journal, 10: 323-337.

- Ghoshal, S. and Bartlett, C.A. (1988). "Creation, Adoption, and Diffusion of Innovations by Subsidiaries of Multinational Corporations", Journal of International Business Studies, 19-3, pp. 365-87.
- Ghoshal, S. and Bartlett, C.A. (1990). "The Multinational Corporation as an Interorganizational Network". Academy of Management Review, 15:4, pp. 603-25.
- Ghoshal, S. and Nohria, N. (1990). "Internal Differentiation within Multinational Corporations", Strategic Management Journal, 10:4, pp. 323-38.
- Ghoshal, S. and D.E. Westney, (eds.) (1993). Organization Theory and the Multinational Corporation. New York: St. Martin's Press.
- Giddens, A. (1976). New Rules of Sociological Method. New York: Basic Books.
- Giddens, A. (1984). The Constitution of Society. Berkeley, Ca: University of California Press.
- Giddens, A. (1987). "Structuralism, Post-Structuralism and the Production of Culture", in A. Giddens and J.H. Turner (eds.), Social Theory Today. Stanford University Press, pp. 195-223.
- Ginko Kaisha Yoroku* (Handbook of Banks and Companies). 1897-1935 editions. Annual. Tokyo Koshinsho, Inc.
- Ginko- Kaisha Nenkan* (Yearbook of Banks and Companies). 1928-1935 editions. Annual. Daiyamondo-sha.
- Ginsberg, A. (1990). "Connecting Diversification to Performance: A Sociocognitive Approach", Academy of Management Review, 15, pp. 514-35.
- Gluck, Carol. 1985. Japan's Modern Myths: Ideology in the Late Meiji Period. Princeton, NJ: Princeton University Press.
- Goffman, E. (1974). Frame Analysis. New York: Harper & Row.
- Gordon, Andrew. 1988. The Evolution of Labor Relations in Japan: Heavy Industry, 185 1955. Cambridge, MA: Council on East Asian Studies, Harvard University.
- Gouldner, A. (1954). Patterns of Industrial Bureaucracy. New York: Free Press.
- Govindarajan, V. 1984. Appropriateness of accounting data in performance evaluation: An empirical examination of environmental uncertainty as an intervening variable. Accounting, Organizations, and Society, 9(2): 125-135.
- Hagstrom, P. (1990). "New Information Systems and the Changing Structure of MNCs", in C. Bartlett, Y. Doz and G. Hedlund (eds.) Managing the Global Firm. London and New York: Routledge & Kegan Paul, pp. 164-185.
- Hall, Frank M. and Azumi, Koya (1989), "Teamwork in Japanese Labs", Research Technology Management 32(6): 21-6.

- Hall, Richard. (1968). "Professionalization and bureaucratization." American Sociological Review, 33: 92-104.
- Hamel, G. (1990). "A Theory of Competitive Collaboration", doctoral dissertation, University of Michigan.
- Hamel, G. and Prahalad, C.K. (1985). "Do You Really Have a Global Strategy?" Harvard Business Review July-August, pp. 139-48.
- Hamel, G. and Prahalad, C.K. (1989). "Strategic Intent", Harvard Business Review, 67:3, pp. 63-76.
- Hamel, G. and Prahalad, C.K. (1990). "The Core Competence of the Corporation," Harvard Business Review, 68:3, pp. 79-91.
- Hannan, Michael T. and Freeman, J. (1977). "The Population Ecology of Organizations," American Journal of Sociology, 82, pp. 929-64.
- Hannan, Michael T. and Freeman, J. (1984). "Structural Inertia and Organizational Change," American Sociological Review, 49, pp. 149-64.
- Hannan, Michael T. and Freeman, J. (1989). Organizational Ecology. Cambridge, Mass: Harvard University Press.
- Harrigan, K. R. 1984. Innovation within overseas subsidiaries. Journal of Business Strategy, 4(4):47 55.
- Harrigan, K. (1985). Strategies for Joint Ventures, Lexington, Mass: Lexington Books.
- Harris, N. (1990). Cultural Excursions. University of Chicago Press.
- Hedlund, G. (1980). "The Role of Foreign Subsidiaries in Strategic Decision-making in Swedish Multinational Corporations", Strategic Management Journal, 9, pp. 23-6.
- Hedlund, G. (1981). "Autonomy of Subsidiaries and Formalization of Headquarters-Subsidiary Relationships in Swedish MNCs", in Lars Otterbeck (ed.) The Management of Headquarter Subsidiary Relationships in Multinational Corporations. Aldershot: Gower, pp. 25-78.
- Hedlund, G. (1986). "The Hypermodern MNC: A Heterarchy?", Human Resource Management, 25, pp. 9-35.
- Hedlund, G. (1988). "The First Theory of Hierarchy: Contemplation of Its Pervasiveness in Modern Business Life", Institute of International Business, Research Paper 88/4.
- Hedlund, G. and Rolander, D. (1990). "Action in Heterarchies: New Approaches to Managing the MNC", in C.A. Bartlett, Y. Doz and G. Hedlund (eds.) Managing the Global Firm. London and New York: Routledge & Kegan Paul.

- Heenan, D.A. and Perlmutter, H.V. (1979). Multinational Organization Development: A Social Architecture Perspective. Reading, Mass: Addison-Wesley.
- Henderson, Rebecca (1991), "Successful Japanese Giants: A Major Challenge to Existing Theories of Technological Capability." Working Paper, Massachusetts Institute of Technology.
- Hennart, J. F. (1988). "Upstream Vertical Integration in the Aluminum and Tin Industries", Journal of Economic Behavior and Organization, 9, pp. 281-99.
- Hennart, J.F. (1982). A Theory of Multinational Enterprise. Ann Arbor: University of Michigan Press.
- Herbert, Evan (1989), "Japanese R&D in the United States." Research Technology Management 32 (6): 11-20.
- Herbert, Evan (1990), "How Japanese Companies set R&D Directions." Research Technology Management 33 (5): 28-37.
- Herbert, T.T. (1984). "Strategy and Multinational Organization Structure: An Interorganizational Relations Perspective". Academy of Management Review, 9, pp. 259-70.
- Heritage, J.C. (1987). "Ethnomethodology", in A. Giddens and J.H. Turner (eds.) Social Theory Today. Stanford University Press, pp. 224-272.
- Hill, C. W. L. and Kim, W.C. (1988). "Searching for a Dynamic Theory of the Multinational Enterprise: A Transaction Cost Model", Strategic Management Journal, 9, pp. 93-104.
- Hirsch, P.M. (1972). "Processing Fads and Fashions: An Organization-Set Analysis of Cultural Industry Systems", American Journal of Sociology 77, pp. 639-659.
- Hirsch, S. (1976). "An International Trade and Investment Theory of the Firm", Oxford Economic Papers, 28, pp. 258-270.
- Hirschmeier, Johannes, and Tsunehiko Yui. (1975). The Development of Japanese Business, 1600-1973. Cambridge, MA: Harvard University Press.
- Hirschmeier, Johannes. (1964). The Origins of Entrepreneurship in Meiji Japan. Cambridge, MA: Harvard University Press.
- Hirschmeier, Johannes. (1965). "Shibusawa Eiichi: Industrial Pioneer." Chapter 5, pp. 209-47 in State and Economic Enterprise in Japan, edited by William W. Lockwood. Princeton, NJ: Princeton University Press.
- Hirst, M. K. 1983. Reliance on accounting performance measures, task uncertainty, and dysfunctional behavior: Some extensions. Journal of Accounting Research. 21: 596-605.

- Hofstede, G. (1980a). Culture's Consequences: International Differences in Work-related Values. Beverly Hills, Ca: Sage.
- Hofstede, G. (1980b). "Motivation, Leadership and Organization: Do American Theories Apply Abroad?", Organizational Dynamics, Summer, pp. 42-63.
- Homans, G. (1974). Social Behavior: Its Elementary Forms. 2nd Edition. New York: Harcourt, Brace, & World.
- Honpo- Shuyo Kigyo Keifuzu Shusei* (Collection of Genealogies of Japanese Companies). Document Center, Institute of Economics and Management, Kobe University. 1981. Contains genealogical charts of all corporations listed in the Tokyo stock exchange as of 1980 (527 cases).
- Hoogvelt, A. and Puxty, A.G. (1987). Multinational Enterprise: An Encyclopedic Dictionary of Concepts and Terms. London: Macmillan.
- Hopwood, A. G. 1972. An empirical study of the role of accounting data in performance evaluation. Journal of Accounting Research, 10: 156-182.
- Horie, Yasuzo. 1965. "Modern Entrepreneurship in Meiji Japan." Chapter 4, pp. 183-208 in State and Economic Enterprise in Japan, edited by William W. Lockwood. Princeton, NJ: Princeton University Press.
- Horst, T. (1972). "Firm and Industry Determinants of the Decision to Invest Abroad: An Empirical Study", Review of Economics and Statistics, 54, pp. 258-66.
- Houston, B. K. 1972. Control over stress, locus of control, and response to stress. Journal of Personality and Social Psychology. 21: 249-255.
- Hout, T., Porter, M.E., and Rudden, E. (1982). "How global companies win out", Harvard Business Review, September-October, pp. 98-108.
- Hrebiniak, L.G. and Joyce, W.J. (1985). "Organizational Adaptation: Strategic Choice and Environmental Determinism", Administrative Science Quarterly, 30, 336-49.
- Huber, G.P. (1982). "Organizational Information Systems: Determinants of Their Performance and Behavior", Management Science, 28:2, pp. 138-155.
- Huber, G.P. (1990). A Theory of the Effects of Advanced Information Technologies on Organizational Design, Intelligence, and Decision Making." Academy of Management Review 15, pp. 47-71.
- Huddleston, Jackson N. (1990). Gaijin Kaisha: Running a Foreign Business in Japan. Tokyo: Charles Tuttle Co..
- Hulbert, J.M. and Brandt, W.K. (1980). Managing the Multinational Subsidiary. New York: Holt, Rinehart and Winston.
- Hymer, S.H. (1960). The International Operations of National Firms, doctoral dissertation, MIT.

- Hymer, S.H. (1970). "The Efficiency (Contradictions) of Multinational Corporations", American Economic Review, 60, pp. 441-48.
- Hymer, S.H. (1976). The International Operations of National Firms: A Study of Direct Investment. Cambridge, MA: MIT Press.
- Imai, K., Nonaka, I., and Takeuchi, H. (1985), "Managing the New Product Development Process: How Japanese Companies Learn and Unlearn" in Kim Clark et al., eds., The Uneasy Alliance, Harvard Business School Press, Boston.
- Imuta, Toshimitsu. 1968. "Kindai Shin"yo Seido no Keisei to Kabushiki Gaisha no Fukyu." Chapter 4, pp. 129-82 in Koza Nihon Shihonshugi Hattatsushi Ron, vol. 1, Keiseiki no Nihon Shihonshugi, edited by Ichiro Kawai, Etsuji Kinoshita, Shoichiro Shinno, Makoto Takahashi and Genzo Hazama. Tokyo: Nihon Hyoronsha.
- International directory of corporate affiliations. 1990. Willamette, IL: National Register Publishing Company.
- Iriye, Akira. 1989. "Japan's Drive To Great Power Status." Chapter 12, pp. 721-82 in The Cambridge History of Japan, vol. 5, The Nineteenth Century, edited by Marius B. Jansen. Cambridge: Cambridge University Press.
- Jablin, F. M. 1979. Superior-subordinate communication: The state of the art. Psychological Bulletin, 6:1201-1222.
- Jaeger, A.M. (1983). "The Transfer of Organizational Culture Overseas", Journal of International Business Studies, 14:2, pp. 91-105.
- Jansen, Marius B., and Gilbert Rozman, eds. 1986. Japan in Transition: From Tokugawa to Meiji Princeton, NJ: Princeton University Press.
- Jensen, M. C., & Meckling, W. H. 1976. Theory of the firm: Managerial behavior, agency costs, and ownership structure. Journal of Financial Economics, 3: 305-360.
- Jensen, M.C. and Meckling, W.H. (1976). "Theory of the Firm: Managerial Behavior, Agency Costs and Capital Structure", Journal of Financial Economics, 3, pp. 305-60.
- Johnson, Chalmers. 1982. MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925-1975. Stanford: Stanford University Press.
- Jones, M.O., Moore, M.D. and Snyder, R.C. (eds) (1988). Inside Organizations. Newbury Park, Ca: Sage.
- Kabushiki Nenkan, (Securities Yearbook). Annual. Nomura Shoten Chosabu.

- Kadushin, C. 1978. On the problem of formalizing emergent networks among innovators in education. Paper presented for the school capacity for problem solving group in the National Institute for Education.
- Kagaku Gijutsu Cho Gijutsu Seisaku Kyoku* (1990), Kagaku Gijutsu Yoran (Heisei 2 Nenpan) (Science and Technology Indicators 1990), Okura-sho Insatsu Kyoku, Tokyo.
- Kaisha Tokeihyo* (Tables of Company Statistics). 1894-1935 editions. Annual. Office of Investigation and Statistics, Ministry of Commerce and Industry.
- Kamata, S. (1980). Japan in the Passing Lane. New York: Random House.
- Kanter, R. (1972). Commitment and Community. Cambridge, Mass: Harvard University Press.
- Kigyo Tokei Soran* (Collection of Company Statistics). 1922-1935 editions. Annual. Toyo Keizai Shimposha.
- Kilduff, M. (1991). "Deconstructing Organizations", working paper, Pennsylvania State University.
- Kilduff, M. and Abolafia, M.Y. (1989). The Social Destruction of Reality: Organizational Conflict as Social Drama, Working Paper No. 89/24, Fontainebleau, France: INSEAD.
- Kilduff, M. and Angelmar, R. (1989). Shared History or Shared Culture? The Effects of Time, Culture, and Performance on Institutionalization in Simulated Organizations, Working Paper No. 89/05, Fontainebleau, France: INSEAD.
- Kim, W. C. and Lyn, E.S. (1987). "Foreign Direct Investment Theories, Entry Barriers and Reverse Investments in U. S. Manufacturing Industries", Journal of International Business Studies, 19-2, pp. 53-66.
- Kim, W. C., and Mauborgne, R.A. (1991). "Implementing Global Strategies: The Role of Procedural Justice", Strategic Management Journal, 12, Special Issue on Global Strategy, pp. 125-44.
- Kim, W.C. and Mauborgne, R.A. (1988). "Becoming an Effective Global Competitor", The Journal of Business Strategy January-February, pp. 33-37.
- Kim, W.C., and R.A. Mauborgne. (1989). "Assessing the Administrative Forms for Managing the Modern Multinational", mimeo, The Michigan Business School.
- Kimberly, J. (1975). "Environmental Constraints and Organizational Structure: A Comparative Analysis of Rehabilitation Organizations", Administrative Science Quarterly, 20, pp. 1-9.
- Kimura, Y. (1989). "Firm Specific Strategic Advantages and Foreign Direct Investment Behavior of Firms", Journal of International Business Studies, 10:2, pp. 296-314.

- Kindleberger, C.P. (1969). American Business Abroad. New Haven, Conn: Yale University Press.
- Kindleberger, C.P. (1973). International Economics. 5th Edition. Homewood, Il: Irwin.
- King, M.J. (1981). "Disneyland and Walt Disney World: Traditional Values in Futuristic Form", Journal of Popular Culture, 15, pp. 116-40.
- Klein, B., Crawford, R. and Alchian, A. (1978). "Vertical Integration, Appropriable Rents, and the Competitive Contracting Process", Journal of Law and Economics, 21, pp. 297-326.
- Klein, S., Frazier, G.L. and Roth, V.J. (1990). "A Transaction Cost Analysis Model of Channel Integration in International Markets", Journal of Marketing Research, 27, pp. 196-208.
- Kmetz, John L. (1984). "An Information-processing Study of a Complex Workflow in Aircraft Electronics Repair", Administrative Science Quarterly, 29, pp. 255-280.
- Knoke, David, and Edward O. Laumann. (1982). The Social Organization of National Policy Domains. In Social Structure and Network Analysis, ed. P. Marsden and N. Lin. Beverly Hills, Calif.: Sage.
- Knoke, David. (1982). The Spread of Municipal Reform: Temporal, Spatial, and Social Dynamics. American Journal of Sociology 87:1314-39.
- Knoke, David. (1986). Associations and Interest Groups. Annual Review of Sociology 12:1-21.
- Kobayashi, Kaoru. (1991). Corporate In-house Education, Journal of Japanese Trade and Industry, (No. 5, 1991), p.8 -11.
- Kobayashi, Yoshihiro. (1980). Kigyo no gurupu no bunseki hoko: Kotorii jimukyoku Kigyo shudan no jittai chosa ni tsuite o yonde (A trend in the analysis of business groups: A comment on About the research on the state of affairs in the business groups). Tokyo: Bureau of Fair Trade Commission.
- Kobrin, S.J. (1976). "The Environmental Determinants of Foreign Direct Manufacturing Investment: An Ex-Post Empirical Analysis", Journal of International Business Studies, 7, pp. 29-42.
- Kobrin, S.J. (1988a). "Expatriate Reduction and Strategic Control in American Multinational Corporations", Human Resource Management, 27:1, pp. 63-75.
- Kobrin, S.J. (1988b). "Trends in Ownership of U.S. Manufacturing Subsidiaries in Developing Countries: An Interindustry Analysis", in Farok J. Contractor and Peter Lorange (eds.) Cooperative Strategies in International Business. Lexington, Mass: Lexington Books, pp. 129-142.

- Kobrin, S.J., Basek, J., Blank, S. and La Palombara, J. (1980). "The Assessment and Evaluation of Noneconomic Environments by American Firms: A Preliminary Report", Journal of International Business Studies, 11, pp. 32-46.
- Kochan, Thomas, Harry Katz, and Robert McKersie. 1986. The Transformation of American Industrial Relations. New York: Basic Books.
- Kogut, B. (1983). "Foreign Direct Investment as a Sequential Process", in C. Kindleberger and D. Andretsch (eds.) The Multinational Corporation in the 1980s. Cambridge, MA: MIT Press, pp. 38-56.
- Kogut, B. (1985a). "Designing global strategies: Comparative and competitive value added chains", Sloan Management Review, Summer, pp. 15-28.
- Kogut, B. (1985b). "Designing global strategies: Profiting from operational flexibility", Sloan Management Review, Fall, pp. 27-38.
- Kogut, B. (1988a). "Country Patterns in International Competition: Appropriability and Oligopolistic Agreement", in N. Hood and J.E. Vahlne (eds), Strategies in Global Competition. London: Croom-Helm.
- Kogut, B. (1988b). "Joint Ventures: Theoretical and Empirical Perspectives", Strategic Management Journal, 9, pp. 319-332.
- Kogut, B. (1989). "A Note on Global Strategies", Strategic Management Journal, 10, pp. 383-389.
- Kogut, B. (1990). "The Permeability of Borders and the Speed of Learning Among Countries", Globalization of Firms and the Competitiveness of Nations. Crafoord Lectures, University of Lund.
- Kogut, B. (1991). "Country Capabilities and the Permeability of Borders", Strategic Management Journal, 12, Special Issue on Global Strategy, pp. 33-48.
- Kogut, B. and Chang, S.J. (forthcoming) "Technological Capabilities and Japanese Foreign Direct Investment in the United States", Review of Economics and Statistics.
- Kogut, B. and Zander, U. (forthcoming) "The Knowledge of the Firm and the Replication of Technology", Organization Science.
- Kogut, B., Shan, W.J. and Walker, G. (1990). "The Structuring of an Industry: Embeddedness Among Bio-technology Firms", Mimeo.
- Kolde, E. J. (1985). Environment of International Business. (2d. ed.) Boston: Kent Publishing Company.
- Kosei Torihiki linkai Jimukyoku (Fair Trade Commission). (1983). Kigyo shudan no jittai ni tsuite (About the state of affairs in business groups). Tokyo: Bureau of Fair Trade Commission.

- Krackhardt, D., and Kilduff, M. (1990) "Friendship Patterns and Culture: The Control of Organizational Diversity", American Anthropologist, 92, pp. 142-54.
- Krasner, Stephen D. (1988). Sovereignty: An Institutional Perspective. Comparative Political Studies 21(1):66-94.
- Krasner, Stephen D., ed. (1983) . International Regimes. Ithaca: Cornell University Press.
- Kuin, P. (1972). "The Magic of Multinational Management", Harvard Business Review, Nov-Dec., pp. 89-97.
- Kunda, G. (1992). Engineering Culture. Philadelphia: Temple University Press.
- Landsberger, H. A. (1961). "The Horizontal Dimension in Bureaucracy", Administrative Science Quarterly, 6, pp. 299-332.
- Laumann, E.O, Glaskiewicz, J. and Marsden, P.V. (1978). "Community Structure as Interorganizational Linkages", Annual Review of Sociology, 4, pp. 455-84.
- Laumann, E.O., Marsden, P.V. and Prensky, D. (1983). "The Boundary Specification Problem in Network Analysis", in R.S. Burt and M.J. Minor and associates (eds.) Applied Network Analysis: A Methodological Introduction. Beverly Hills, Ca: Sage.
- Laurent, A. (1978). "Managerial Subordinacy", Academy of Management Review, pp. 220-230.
- Laurent, A. (1983). "The Cultural Diversity of Western Conceptions of Management", International Studies of Management and Organization, 13, pp. 75-96.
- Laurent, A. (1986). "The Cross-Cultural Puzzle of International Human Resource Management", Human Resource Management, 25, pp. 91-102.
- Lawrence, C. (1983). "Nissan's Way", Miami Herald, 26 June, p. 5F.
- Lawrence, Paul R., and Jay W. Lorsch. (1967). Organization and Environment: Managing Differentiation and Integration. Boston: Graduate School of Business, Harvard University.
- Lazarsfeld, P.F. and Menzel, H. (1969). "On the Relation Between Individual and Collective Properties", in A. Etzioni (ed.) Complex Organizations: A Sociological Reader. New York: Holt, Rinehart and Winston, pp. 499-516.
- Leach, E.R. (1976). Culture and Communication. Cambridge University Press.
- Lee, D. 1990. India waits for a Lotus to blossom. Business Week, June 15: 155.
- Lessard, D. R. (1979). Transfer prices, taxes, and financial markets: Implications of international financial transfers within the multinational firm. In R. G. Hawkins

(Ed.), The economic effects of multinational firms: 101-125. Greenwich, CT: JAI Press.

Lessard, Donald R. (1985). "International finance for less developed countries : the unfulfilled promise." Cambridge, Mass. : Massachusetts Institute of Technology, Alfred P. Sloan School of Management, Working paper 1659-85.

Lessard, Donald R. (ed.) (1985). International financial management : theory and application. New York : Wiley.

Lessard, Donald R. (1986). "International financing for developing countries : the unfulfilled promise." Washington, D.C., U.S.A. : World Bank, World Bank staff working papers, no. 783.

Lessard, Donald R. (1989). Beyond the debt crisis : alternative forms of financing growth. Cambridge, Mass. : Sloan School of Management, Massachusetts Institute of Technology, Working paper (Sloan School of Management) WP 1921-89.

Lessard, Donald R. (1990). Managing the Globalization of Business. Editoriale Scientifica.

Lessard, D. and Lightstone, J.B. (1986). "Volatile Exchange Rates Can Put Operations at Risk", Harvard Business Review, July-August, pp. 107-14.

Lessard, Donald R. and James L. Paddock. (1983). "Evaluating international projects : weighted-average cost of capital versus valuation by components." Cambridge, Mass. : Massachusetts Institute of Technology, Working paper WP#1499-83.

Lessard, Donald R. and John Williamson. (1985). "Financial intermediation beyond the debt crisis." Washington, DC : Institute for International Economics.

Lessard, Donald R. and John Williamson. (ed.) (1987). Capital flight and Third World

Levitt, B. and March, J.G. (1987). "Organizational Learning", Annual Review of Sociology 14, pp. 319-40.

Levitt, T. (1983). "The Globalization of Markets". Harvard Business Review 61:3, pp. 92-102.

Lincoln, J., Hanada, M. and McBride, K. (1986). "Organizational Structures in Japanese and U.S. Manufacturing", Administrative Science Quarterly, 31, pp. 338-64.

Lincoln, James and Arne Kalleberg. (1990). Culture, Control and Commitment: A Study of Work Organization and Work Attitudes in the United States and Japan. Cambridge: Cambridge University Press.

Lorsch, J. W., & Allen, S. (1973). Managing diversity and interdependence. Boston: Division of Research, Harvard Business School.

Lorsch, J. W., and Morse, J. J. (1974). Organizations and their members: A contingency approach. New York: Harper & Row.

- Luustorinen, R. and Welch, L. (1989). "Internationalization: Evolution of a Concept", Journal of General Management, 14, pp. 34-55.
- Magee, S.P. (1977). "Information and the Multinational Corporation: An Appropriability Theory of Direct Foreign Investment", in J.N. Bhagwati (ed.) The New International Economic Order: The North-South Debate. Cambridge, Mass: MIT Press, pp. 317-46.
- Mason, Mark. (1988). "Foreign Direct Investment and Japanese Economic Development, 1899-1931," Business and Economic History, Second Series 16: 93-107.
- Mason, Mark. (1990). "With Reservations: Prewar Japan as Host to Western Electric and ITT," in Yuzawa Takeshi and Udagawa Masaru, eds., Foreign Business in Japan before World War II (Tokyo: University of Tokyo Press), pp. 175-192.
- Mason, Mark. (1992). American Multinationals and Japan: The Political Economy of Japanese Capital Controls. Cambridge, MA: Harvard University Press, Council on East Asian Studies.
- Mahini, A. and Wells, L.T. (1986). "Government Relations in the Global Firm", in M.E. Porter (ed.) Competition in Global Industries. Boston, Mass: Harvard Business
- Mansfield, Edwin (1988a), "Industrial Innovation in Japan and the United States" Science 241: 1769-74.
- Mansfield, Edwin (1988b), "Industrial R&D in Japan and the United States" American Economic Review 78 (2): 223-8.
- Mansfield, Edwin (1988c), "The Speed and Cost of Industrial Innovation in Japan and the United States: External vs. Internal Technology," Management Science 34-10: 1157-68.
- March, James G. (1981). Decisions in Organizations and Theories of Choice. In Perspectives on Organization Design and Behavior, ed. A. H. Van de Van and W. F. Joyce, 205-44. New York: Wiley.
- March, James G. and H.A. Simon. (1958). Organizations. New York: John Wiley.
- March, James G., and Johan P. Olsen. (1984). The New Institutionalism: Organizational Factors in Political Life. American Political Science Review 78:734-49.
- March, James G. and Johan P. Olsen. (1980). Ambiguity and Choice in Organizations. 2nd edition, Oxford University Press.
- March, James G., and Johan P. Olsen. (1976). Ambiguity and Choice in Organizations. Bergen: Universitetsforlaget.

- March, Robert. (1992). *Working for a Japanese Company: Insights into the Multi-Cultural Work Place*. Tokyo: Kodansha International.
- Marrett, Cora Bagley. 1980. Influences on the Rise of New Organizations: The Formation of Women's Medical Associations. Administrative Science Quarterly 25:18999.
- Marshall, Byron K. 1967. Capitalism and Nationalism in Prewar Japan: The Ideology of the Bwiness Elite, 1868-1941. Stanford, CA: Stanford University Press.
- Martinez, J. and Jarillo, J. C. (1989). "The Evolution of Research on Coordination Mechanisms in Multinational Corporations", Journal of International Business Studies, Fall, 20:3, pp. 489-514.
- Maruyama, M. (1978). "The Epistemological Revolution", Futures. June, pp. 240-42.
- Masaki, Hisashi. (1986). "The Formation and Evolution of the Corporate Business System in Japan." Japanese Yearbook on Business History 3: 26-51.
- Mathias, D. (1978). The Role of the Logistics System in Strategic Change. Unpublished doctoral dissertation, Harvard Business School.
- Matsushita's Regional Training. Newsweek, Oct. 5, 1991 p. 12.
- McKelvey, William. 1982. Organizational Systematics. Berkeley: University of California Press.
- McManus, J. C. (1972). "The Theory of the International Firm", in Gilles Paquet (ed.), Multinational Firm and the Nation State. Don Mills, Ont: Collier Macmillan.
- Meiji 100-nen Kigyo no Rekishi* (The History of Industry and Enterprise: 100 Years Since Meiji). 1968. Keizai Shunju.
- Merton, R.K. (1936). "The Unanticipated Consequences of Purposive Social Action", American Sociological Review, 1.
- Merton, Robert K., L. Brown, and L. S. Cottrell, Jr. (1959). Sociology Today Problems and Prospects. New York: Basic Books.
- Merton, Robert K. (1940). Bureaucratic Structure and Personality. Social Forces 18:560-68.
- Merton, Robert K. (1949). Patterns of Influence: A Study of Interpersonal Influence and of Communications Behavior in a Local Community. In Communication Research, 1948-49, ed. P. F. Lazarsfeld and F. Stanton, 16-22. New York: Harper.
- Meyer, John W. (1968). Collective Disturbances and Staff Organizations on Psychiatric Wards: A Formalization. Sociometry 31:180.

- Meyer, John W. (1970). The Chaner: Conditions of Diffuse Socialization in Schools. In Social Processes and Social Structure, ed. W. R. Scott, 564-78. New York: Holt, Rinehan, and Winston.
- Meyer, John W. (1977). The Effects of Education as an Institution. American Journal of Sociology 83:53-77.
- Meyer, John W. (1983a). Innovation and Knowledge Use in American Public Education. In Organizational Environments, ed. J. W. Meyer and W. R. Scott, 233-60. Beverly
- Meyer, John W. and Hannan, M.T. (1979). National Development and the World System: Educational, Economic, and Political Change 1950-1970. University of Chicago Press.
- Meyer, John W., and Brian Rowan. (1977). "Institutional Organizations: Formal Structure as Myth and Ceremony." American Journal of Sociology 83: 340-63.
- Meyer, John W., and W. Richard Scott, eds. (1983). Organizational Environments: Ritual and Rationality. Beverly Hills, CA: Sage Publications, Inc.
- Meyer, John W., Scott, W.R., and Deal, T.E. (1983). "Institutional and Technical Sources of Organizational Structure: Explaining the Structure of Educational Organizations", in JOHN W. Meyer and W.R. Scott, eds., Organizational Environments: Ritual and Rationality. Beverly Hills: Sage Publications, pp. 45-70.
- Meyer, John W. and Zucker, L.G. (1989). Permanently Failing Organizations. Newbury Park, Ca: Sage.
- Mezias, S.J. (1990). "An institutional model of organizational practice: financial reporting in the Fortune 200", Administrative Science Quarterly, 35:3, pp. 431-457.
- Miller, W. (1955). "Two Concepts of Authority", American Anthropologist, 57, pp. 271-89.
- Miller, D., Kets de Vries, M. F. R., & Toulouse, J. M. (1982). Top executive locus of control and its relationship to strategy-making, structure, and environment. Academy of Management Journal, 25: 237-253.
- Mintzberg, H. (1978). Patterns in strategy formation. Management Science, 24: 934-948.
- Mintzberg, H., Raisinghani, D., and Theoret, A. (1976). "The Structure of "Unstructured" Decision Processes". Administrative Science Quarterly, 21, pp. 246-75.
- Mintzberg, H.A. (1973). The Nature of Managerial Work. New York: Harper & Row.

- Mintzberg, H.A. (1979). The Structuring of Organizations. Englewood Cliffs, NJ: Prentice-Hall.
- Mirrlees, J. (1976). "The Optimal Structure of Incentives and Authority within an Organization", Bell Journal of Economics, 7 (Spring), pp. 105-31.
- Mitchell, J.C. (1973). "Networks, Norms and Institutions", in J. Boissevain and J.C. Mitchell (eds) Network Analysis. The Hague: Mouton, pp. 15-35.
- Miwa, Ryoichi. 1968. "Shoho Seitei to Tokyo Shogyo Kaigisho." Pp. 149-62 in Shihonshugi no Keisei to Hatten, edited by Hisao Otsuka, Tomoo Matsuda, Yoshio Ando and Yoshiyuki Sekiguchi. Tokyo: Tokyo Daigaku Shuppankai.
- Montagna, P. (1990). "Accounting Rationality and Financial Legitimation", in S. Zukin and P. DiMaggio (eds) Structures of Capital. Cambridge University Press, pp. 227-60.
- Moran, T.H., ed. (1985). Multinational Corporations: The Political Economy of Foreign Direct Investment. Lexington, Mass: Lexington.
- Morgan, G. (1986). Images of Organization. Newbury Park, Ca: Sage.
- Moulder, Frances V. 1977. Japan, China, and the Modern World Economy: Towards a Reinterpretation of East Asian Development, ca. 1600 to ca. 1918. Cambridge: Cambridge University Press.
- Myerhoff, B. (1983). "The Tamed and Colonized Imagination in Disneyland", unpublished paper. Department of Anthropology, University of Southern California.
- Nadler, D. A., & Tushman, M. L. (1987). Strategic organization design. Glenview, IL: Scott, Foresman.
- Nakane, C. (1970). Japanese Society. Berkeley: University of California Press.
- National Science Foundation (1988), International Science and Technology Update 1988 (NSF 89-307), Washington, DC.
- Negandhi, A.R. and Baliga, R. (1981). "Internal Functioning of American, German and Japanese Multinational Corporations", in L. Otterbeck (ed.), The Management of Headquarter Subsidiary Relationships in Multinational Corporations. Aldershot: Gower, pp. 107-20.
- Negandhi, A.R. and Baliga, R. (eds) (1980). Functioning of the Multinational Corporation. Oxford: Pergamon Press.
- Nelson, R., and Winter, S. (1982). An Evolutionary Theory of Economic Change. Cambridge, Mass: Harvard University Press.
- Newman, William H. (1975). Constructive Control. Englewood Cliffs, NJ: Prentice-Hall.

- Nihon Kaishashi Soran* (Collection of Japanese Company Histories). 1954. Keizai Oraisha.
- Nishiguchi, T. (1989). "Strategic Dualism: An Alternative in Industrial Societies", unpublished dissertation, Nuffield College.
- Nohria, N. and Ghoshal, S. (1989). "The MNC as a Differentiated Network", unpublished paper. Boston, Mass: Harvard Business School.
- Nohria, N. and Venkatraman, N. (1987). "Interorganizational Information Systems via Information Technology: A Network Analytic Perspective", working paper No. 1909-87, Sloan School of Management, MIT.
- Nonaka, Ikujiro (1990), "Redundant, Overlapping Organization: A Japanese Approach to Innovation", California Management Review 32(3): 27-38.
- Nonaka, Ikujiro. (1990). "Managing Globalization as a Self-Renewing Process: Experiences of Japanese MNCs", in C.A. Bartlett, Y. Doz, and G. Hedlund (eds.) Managing the Global Firm. London: Routledge & Kegan Paul.
- Norman, R. (1976). Management and Statesmanship. Stockholm: SIAR.
- Norton, R. W. (1975). Measurement of ambiguity tolerance. Journal of Personality Assessment, 39:607-619.
- Ochs, E. (1988). Culture and Language Development. New York: Cambridge University Press.
- Ohmae, K. (1985). "The Global Logic of Strategic Alliances," Harvard Business Review 67-2, pp. 143-154.
- Ohmae, K. (1990). The Borderless World: Management Lessons in the New Logic of the Global Marketplace. New York: Harper Collins.
- Okimoto, Daniel I. 1989. Between MITI and the Market: Japanese Industrial Policy for High Technology. Stanford: Stanford University Press.
- Okimoto, Daniel, and Saxonhouse, Gary (1987), "Technology and the Future of the Economy", in K. Yamamura and Y. Yasuba, (eds.), The Political Economy of Japan. The Domestic Transformation, Stanford University Press, Stanford, Calif., 385-419.
- Okimoto, Daniel, and Saxonhouse, Gary (1987), "Technology and the Future of the Economy", in K. Yamamura and Y. Yasuba, (eds.), The Political Economy of Japan. The Domestic Transformation, Stanford University Press, Stanford, Calif., 385-419.
- Organ, D. W., & Greene, C. N. (1974). The perceived purposefulness of job behavior: Antecedents and consequences. Academy of Management Journal, 17: 69-78.
- Orru, M, Woolesey Biggart, N., and Hamilton, G.G. 1991. "Organizational Isomorphism in East Asia: Broadening the New Institutionalism", in P. DiMaggio

- and W.W. Powell, ed., The New Institutionalism in Organizational Analysis. University of Chicago Press.
- Otley, D. T. (1978). Budget use and managerial performance. Journal of Accounting Research, 16:122-149.
- Ott, S. (1988). The Organization Culture Perspective. Reading, Mass: Addison-Wesley.
- Ouchi, W. (1977). "The Relationship Between Organizational Structure and Organizational Control", Administrative Science Quarterly, 22, pp. 95-113.
- Ouchi, W.G. (1978). "The Transmission of Control Through Organizational Hierarchy", Academy of Management Journal, 21:2, pp. 173-92.
- Ouchi, W.G. (1979). "A Conceptual Framework for the Design of Organizational Control Mechanisms", Management Science, 25:9, pp. 833-48.
- Ouchi, W.G. (1980). "Markets, Bureaucracies and Clans", Administrative Science Quarterly, 25, pp. 129-41.
- Ouchi, W.G. (1981a). "A Framework for Understanding Organizational Failure", in J. Kimberly and R. Miles (eds.) The Organizational Life Cycle. San Francisco: Jossey Bass, 395-430.
- Ouchi, W.G. (1981b). Theory Z. Reading, Mass: Addison-Wesley.
- Ouchi, W. G., & McGuire, M. 1975. Organizational control: Two functions. Administrative Science Quarterly, 20: 559-569.
- Ouchi, W.G. and Wilkins, A.L. (1985). "Organizational Culture", Annual Review of Sociology, 11, pp. 367-411.
- Ozawa, T. (1980). "Japanese World of Work: An Interpretive Survey", MSU Business Topics, Spring, pp. 45-54.
- Parsons, T. (1937). The Structure of Social Action. New York: McGraw-Hill.
- Parsons, Talcott, ed. 1964. The Social System. New York: The Free Press.
- Patrick, Hugh (ed.) (1986), Japan's High Technology Industries: Lessons and Limitations of Industrial Policy. University of Washington Press, Seattle.
- Paul, J.K. (ed.) (1984). High Technology International Trade and Competition. Park Ridge, NJ: Noyes.
- Pavitt, K. (1971). "The Multinational Enterprise and the Transfer of Technology", in J.H. Dunning (ed.) The Multinational Enterprise. London: George Allen & Unwin, pp. 61-85.
- Perlmutter, H.V. (1965). "L'enterprise Internationale -- Trois Conceptions", Revue Economique et Sociale, No. 23.

- Perlmutter, H.V. (1969). "The Tortuous Evolution of the Multinational Corporation", Columbia Journal of World Business, 4, pp. 9-18.
- Perlmutter, H.V. and Trist, E. (1986). "Paradigms for Societal Transition", Human Relations, 39:1, pp. 1-27.
- Perrow, C. A. (1967). A framework for the comparative analysis of organizations. American Sociological Review. 32: 194-208.
- Perrow, C. (1979). Complex Organizations. Second Edition. New York: Random House.
- Perrow, C. (1984). Normal Accidents: Living with High-Risk Technologies. New York: Basic Books.
- Perrow, C. (1986). Complex Organizations: A Critical Essay. Third Edition. New York: Random House.
- Perrow, Charles and Mauro F. Guillen. (1990). The AIDS disaster : the failure of organizations in New York and the nation. New Haven : Yale University Press.
- Peterson, R. (1990). "Symbols and Social Life", Contemporary Sociology, 19, pp. 498-500.
- Pfeffer, J.R. (1981). Power in Organizations. Boston: Pittman.
- Pfeffer, J.R. and Salancik, G.R. (1974). "The Bases and Use of Power in Organizational Decision Making: The Case of a University", Administrative Science Quarterly, 19, pp. 453-73.
- Pfeffer, J.R. and Salancik, G.R. (1978). The External Control of Organizations: A Resource Dependency Perspective. New York: Harper & Row.
- Pitts, R. A. 1974. Incentive compensation and organization design. Personnel Journal. 53: 338-344.
- Polanyi, M. (1958). Personal Knowledge. University of Chicago Press.
- Port, O. 1990. Why the U.S. is losing its lead. Business Week. June 15: 34-39.
- Porter, M.E. (1986). Competition in Global Industries. Cambridge, Mass: Harvard Business School Press.
- Porter, M.E. (1990). The Competitive Advantage of Nations. New York: Free Press.
- Powell, W.W. (1985). Getting Into Print: The Decision-Making Process in Scholarly Publishing. University of Chicago Press.
- Powell, W.W. (1988). "Institutional Effects on Organizational Structure and Performance", in L.G. Zucker, ed., Institutional Patterns and Organizations: Culture and Environment. Cambridge, Mass: Ballinger, pp. 115-138.

- Poynter, T.A. and Rugman, A.M. (1982). "World Product Mandates: How Will Multinational Respond?", Business Quarterly, 47:3, pp. 54-61.
- Prahalad, C.K. (1975). "The Strategic Process in a Multinational Corporation", unpublished doctoral dissertation, School of Business Administration, Harvard University.
- Prahalad, C.K. (1976). "Strategic Choices in Diversified MNCs", Harvard Business Review, July-August, pp. 67-78.
- Prahalad, C.K. and Doz, Y. (1980). "Strategic Management of Diversified Multinational Companies", in A. Negandhi (ed.) Functioning of the Multinational Corporation. New York: Pergamon Press, pp. 77-116.
- Prahalad, C.K. and Doz, Y. (1981). "An Approach to Strategic Control in MNCs", Sloan Management Review, Summer, pp. 5-13.
- Prahalad, C.K., and Doz, Y. (1987). The Multinational Mission: Balancing Local Demands and Global Vision. New York: Free Press.
- Prahalad, C.K. and Hamel, G. (1990). "The Core Competence of the Corporation", Harvard Business Review 90:3, pp. 79-93.
- Provan, K.G. (1983). "The Federation as an Interorganizational Linkage Network", Academy of Management Review, 8, pp. 79-89.
- Provan, K.G., Beyer, J.M. and Kruytbosch, C. (1980). "Environmental Linkages and Power in Resource Dependence Relations Between Organizations", Administrative Science Quarterly, 25, pp. 200-25.
- Ragin, C. C. (1987). The Comparative Method. Berkeley: University of California Press.
- Real, M. (1977). Mass-Mediated Culture. Englewood Cliffs, NJ: Prentice Hall.
- Reibstein, L. (1987). "Firms Trim Annual Pay Increases and Focus on Long Term", Wall Street Journal, 10 April, p. 25.
- Reich, Michael R. (1990), "Why the Japanese Don't Export More Pharmaceuticals: Health Policy as Industrial Policy", California Management Review 32(2): 124-50.
- Ritti, R.R. and Silver, J.H. (1986). "Early Processes of Institutionalization: The Dramaturgy of Exchange in Interorganizational Relations", Administrative Science Quarterly, 31, pp. 25-42.
- Roberts, John G. 1973. Mitsui: Three Centuries of Japanese Business. New York: Weatherhill.
- Robinson, R. D. (1978). International Business Management: A Guide to Decision Making (2d.). Hinsdale: Dryden Press.

- Robinson, R.D. (1967). International Management. New York: Holt, Rinehart & Winston.
- Robock, S.H., Simmons, K. and Zwick, J. (1977). International Business and Multinational Enterprise. Homewood, Il: Irwin.
- Rogers, David L., and David A. Whetten, eds. 1981. Interorganizational Coordination. Ames: Iowa State University Press.
- Rogers, E. (1971). Diffusion of Innovations. New York: Free Press.
- Rogers, Everett M., and F. Floyd Shoemaker. 1971. Communication of Innovations: A Cross Cultural Approach. New York: The Free Press.
- Rohlen, T.P. (1974). For Harmony and Strength. Berkeley: University of California Press.
- Ronstadt, R., & Kramer, R. J. (1982) Getting the most out of innovation abroad. Harvard Business Review, 58(2): 94-99.
- Root, F. R. 1987. Entry strategies for international markets. Lexington, MA: Lexington Books.
- Rosaldo, R. (1989). Culture and Truth. Boston, Mass: Beacon Press.
- Rosenberg, Nathan, and Steinmueller, W. Edward (1988), "Why Are Americans Such Poor Imitators?" American Economic Review 78(2): 229-34.
- Rosenzweig, P. and Singh, J. (1991). "Organizational Environments and the Multinational Enterprise", Academy of Management Review, 16:2, pp. 340-361.
- Rotter, J. B. 1966. Generalized expectations for internal versus external control of reinforcement. Psychological Monographs, 80: 1-27.
- Roumasset, J. and Uy, M. (1980). "Piece Rates, Time Rates, and Teams", Journal of Economic Behavior and Organization, 1, pp. 343-60.
- Rowan, Brian. (1981). The Effects of Institutionalized Rules on Administrators. In Organizational Behavior in Schools and School Districts, ed. S. B. Bacharach, 4775. New York: Praeger.
- Rowan, Brian. (1982). "Organizational Structure and the Institutional Environment: The Case of Public Schools." Administrative Science Quarterly 27(2): 259-79.
- Rugman, A.M. (1980a). "A New Theory of the Multinational Enterprise: Internationalization versus Internalization", Columbia Journal of World Business, Spring, pp. 23-9.
- Rugman, A.M. (1980b). "Internationalization as a General Theory of Foreign Direct Investment: A Re-appraisal of the Literature", Weltwirtschaftliches Archiv, No. 116, pp. 365-79.

- Rugman, A.M. (1981). Inside the Multinationals. New York: Columbia University Press.
- Sabel, C., Herrigel, G., Kazis, R., and Deeg, R. (1987). "How to keep mature industries innovative", Technology Review 90-3, pp. 26-35.
- Sakakibara, Kiyonori (1988), "Increasing Basic Research in Japan: Corporate Activity Alone Is Not Enough", Working Paper No. 8802, Hitotsubashi University.
- Sakakibara, Kiyonori and Westney, D.E. (1992), "Japan's Management of Global Innovation: Technology Management Crossing Borders", in N. Rosenberg, R. Landau, and D.C. Mowery (eds.), Technology and the Wealth of Nations, Stanford University Press, Stanford.
- Salter, M. S. 1973. Tailor incentive compensation to strategy. Harvard Business Review, 49(2): 94-102.
- Saxonhouse, Gary (1986), "Industrial Policy and Factor Markets: Biotechnology in Japan and the United States", in Hugh Patrick (ed.), Japan's High Technology Industries, University of Washington Press, Seattle.
- Schein, E.H. (1961). Coercive Persuasion. New York: Norton.
- Schein, E.H. (1985). Organizational Culture and Leadership. San Francisco: Jossey-Bass.
- Schein, E.H. (1989). "Reassessing the "Divine Rights" of Managers", Sloan Management Review, Winter, pp. 63-8.
- Schoonhoven, C. B. 1981. Problems with contingency theory: Testing assumptions hidden within the language of contingency "theory." Administrative Science Quarterly, 26: 349-377.
- Schwartz, P., and Ogilvy, J. (1979). "The Emergent Paradigm: Changing Patterns of Thought and Belief", Analytical Report: Values and Lifestyles Program, 7, April.
- Scott, W. Richard. (1965). "Field Methods in the Study of Organizations", in J.G. March, (ed.), Handbook of Organizations, Chicago: Rand McNally, pp. 261-304.
- Scott, W. Richard. (1981a). Organizations: Rational, Natural, and Open Systems. Englewood Cliffs, N.J.: Prentice Hall.
- Scott, W. Richard. (1981b). Reform Movements and Organizations: The Case of Aging. In Aging: Social Change, ed. S. B. Kiesler et al., 331-45. New York: Academic Press.
- Scott, W. Richard. (1982a). Health Care Organizations in the 1980s: The Convergence of Public and Professional Control Systems . In Contemporary Health Services: Social Science Perspectives, ed. A. W. Johnson et al., 177-95. Boston: Auburn House.

- Scott, W. Richard. (1982b). Managing Professional Work: Three Models of Control for Health Organizations. Health Services Research 17:213-40.
- Scott, W. Richard. (1983). The Organization of Environments: Network, Cultural, and Historical Elements. In Organizational Environments, ed. J. W. Meyer and W. R. Scott, 155-75. Beverly Hills, Calif.: Sage.
- Scott, W. Richard. (1983). "Health Care Organizations in the 1980s: The Convergence of Public and Professional Control Systems", in Meyer and Scott, eds., Organizational Environments: Ritual and Rationality. Beverly Hills, CA: Sage Publications, pp. 99-113.
- Scott, W. Richard. (1985). Conflicting Levels of Rationality: Regulators, Managers and Professionals in the Medical Care Sector. Journal of Health Administration Education 3, pt. 2: 113-31.
- Scott, W. Richard. (1986). Systems within Systems: The Mental Health Sector. In The Organization of Mental Health Services: Societal and Community Systems, ed. W. R. Scott and B. L. Black, 31-52. Beverly Hills, Calif.: Sage.
- Scott, W. Richard. (1987a). Organizations: Rational, Natural, and Open Systems 2nd
- Scott, W. Richard. (1987b). "The Adolescence of Institutional Theory", Administrative Science Quarterly 32, pp. 493-511.
- Scott, W. Richard. (1988). Environmental Linkages and Organizational Complexity: Public and Private Schools. In Comparing Public and Private Schools, ed. H. M. Levin and T. James, 128-60. New York: Falmer Press.
- Scott, W. Richard. (1990). "Innovation in Medical Care Organizations: A Synthetic Review." Medical Care Review 47(2): 165-192.
- Scott, W. Richard. (1990). Symbols and Organizations: From Barnard to the Institutionalists. In Organization Theory: From Chester Barnard to the Present and Beyond, ed. O. E. Williams, 38-55. New York: Oxford University Press.
- Scott, W. Richard and Meyer, J.W. (1983). "The Organization of societal sectors", in J.W. Meyer and W.R. Scott, eds., Organizational Environments: Ritual and Rationality. Beverly Hills: Sage Publications, pp. 129-53.
- Scott, W. Richard. and Meyer, J.W. (1989) "The Rise of Training Programs in Firms and Agencies: an Institutional Perspective", Stanford University working paper.
- Seiler, E. (1984). "Piece Rate vs. Time Rate: The Effect of Incentive on Earnings", Review of Economics and Statistics, 66:3, pp. 363-75.
- Selznick, Philip. 1949. TVA and the Grass Roots. Berkeley: University of California Press.
- Selznick, Philip. 1957. Leadership in Administration. Evanston, Ill.: Row, Peterson.

- Shapiro, A. (1984). "The Evaluation and Control of Foreign Affiliates", Midland Corporate Finance Journal, Spring, pp. 13-25.
- Sharpe, W. F. 1970. Portfolio theory and capital markets. New York: McGraw-Hill.
- Sheppard, B.H. (1984). "Third-party conflict intervention: A procedural framework", in B.M. Staw and L.L. Cummings (eds.), Research in Organizational Behavior Vol. VI. Greenwich, Conn: JAI Press.
- Sheppard, B.H., and Lewicki, R.J. (1987). "Toward general principles of managerial fairness", Social Justice Research 1, pp. 161-76.
- Shibusawa, Eiichi. 1929. "Ryukai Ryakusoku." Pp. 111-125 in Meiji Bunka Zenshu. Vol. 9. Tokyo: Nihon Hyoronsha.
- Shimpo, Hiroshi. 1967. "Kabushiki Kaisha Seido to Kindaiteki Keiei no Tenkai." Keiei Shigaku 2(1): 77-93.
- Siehl, C. (1985). "After the Founder: An Opportunity to Manage Culture", in P. Frost, L.F. Moore, M.R. Louis, C.C. Lundberg, and J. Martin (eds.) Organizational Culture. Beverly Hills, Ca: Sage, pp. 125-40.
- Simon, H. (1973). "The Organization of Complex Systems", in H. Pattee (ed.) Hierarchy Theory. New York: Braziller.
- Simon, H. (1977). The New Science of Management Decision, revised edition, Englewood Cliffs, NJ: Prentice-Hall.
- Simon, H. (1981). The Sciences of the Artificial. Cambridge, Mass: MIT Press.
- Simon, H. (1989). "Organizations and Markets", working paper, Carnegie-Mellon University.
- Singh, J.V. and Lumsden, C.J. (1990). "Theory and Research in Organizational Ecology", Annual Review of Sociology 16, pp. 161-195.
- Singh, J.V., House, R.J. and Tucker, D.J. (1986). "Organizational change and organizational mortality", Administrative Science Quarterly 31, pp. 587-611.
- Skocpol, Theda, and Margaret Somers. 1980. "The Uses of Comparative History in Macrosocial Inquiry." Comparative Studies in Society and History 22(2): 174-97.
- Smith, Thomas C. 1955. Political Change and Industrial Development in Japan: Government Enterprise, 1868-1880. Stanford, CA: Stanford University Press.
- Snyder, M. (1974). "The Self-Monitoring of Expressive Behavior", Journal of Personality and Social Psychology, 30, pp. 526-37.
- Snyder, M. (1979). "Self-monitoring Processes", Advances in Experimental Social Psychology, 12, pp. 85-128.

- Stalk, G. and Hour, T.M. (1990). Competing Against Time: How Time-based Competition is Reshaping Global Markets, New York: Free Press.
- Stalk, George Jr., and Hout, Thomas M. (1990), Competing Against Time: How Time-Based Competition is Reshaping Global Markets, Free Press, New York.
- Stalk, George Jr., and Hout, Thomas M. (1990), Competing Against Time: How Time-Based Competition is Reshaping Global Markets, Free Press, New York.
- Starbuck, W. (1983). "Organizations as Action Generators", American Sociological Review, 48, pp. 91-102.
- Stinchcombe, A.L. (1965). "Social Structure and Organizations", in J. March (ed.) Handbook of Organizations, Chicago: Rand McNally, pp. 142-93.
- Stinchcombe, Arthur L. (1965). "Social Structure and Organizations." Chapter 4, pp. 142-193
- Stinchcombe, Arthur. (1959). "Bureaucratization and craft administration of production: a comparative study." Administrative Science Quarterly, 3: 168-187.
- Stopford, J.M., and Wells, L.T., Jr. (1972). Managing the Multinational Enterprise: Organization of the Firm and Ownership of Subsidiaries. New York: Basic Books.
- Stopford, J.M., Dunning, J. and Haberich, K.O. (1980). The World Directory of Multinational Enterprises. New York: Facts on File.
- Sun, Marjorie (1989), "Japan Faces Big Task in Improving Basic Science", Science, No. 243 (10 March): 1205-7.
- Szilagyi, A. D., Jr., Sims, H. P., Jr., & Keller, R. T. 1976. Role dynamics, locus of control, and employee attitudes and behavior. Academy of Management Journal. 19 259 276.
- Takara Soichiro, (1989), Nichibei Interijensu Senso (The Japan-U.S. Intelligence War), Bungei Shunju, Tokyo.
- Takeuchi, H., and Nonaka, I. (1986), "The New New Product Development Game", Harvard Business Review, Jan.-Feb.
- Taylor, J. (1983). Shadows of the Rising Sun. New York: William Morrow.
- Taylor, Mary Sullivan (1989), "A Transactions Cost Analysis of Japanese Employment Relationships", Ph.D. dissertation, University of Washington.
- Teece, D. J. (1976). The multinational corporation and the resource cost of technology transfer. Cambridge, MA: Ballinger.
- Teece, David J. (1980). "Economies of Scope and the Scope of the Enterprise", Journal of Economic Behavior and Organization, 1, pp. 223-47.

- Teece, David J. (1983). "A Transaction Cost Theory of the Multinational Enterprise", in M. Casson (ed.) The Growth of International Business. London: Allen & Unwin.
- Teece, David J. (1985). "Multinational Enterprise, Internal Governance and Economic Organization", American Economic Review, 75, pp. 233-38.
- Teece, David J. (1986). "Transaction Cost Economies and the Multinational Enterprise", Journal of Economic Behavior and Organization, 7, pp. 21-45.
- Thomason, G.F. (1966). "Managerial Work Roles and Relationships, Part I", Journal of Management Studies, 3, pp. 270-84.
- Thompson, James D. (1967). Organizations in Action. New York: McGraw-Hill.
- Tichy, N.M., Tushman, M.L. and Fombrun, C. (1979). "Social Network Analysis for Organizations", Academy of Management Review, 4, pp. 507-19.
- Tolbert, Pamela S. (1985). "Resource dependence and institutional environments: Sources of administrative structure in institutions of higher education", Administrative Science Quarterly, 30, pp. 1-13.
- Tolbert, Pamela S., and Lynne G. Zucker. (1983). "Institutional Sources of Change in the Formal Structure of Organizations: The Diffusion of Civil Service Reform, 1880-1935." Administrative Science Quarterly 28(1): 22-39.
- Totten, III, George Oakley. 1977. "Adoption of the Prussian Model for Municipal Government in Meiji Japan: Principles and Compromise." Developing Economies 15(4): 487-510.
- Trimberger, Ellen Kay. 1978. Revolution From Above: Military Bureaucrats and Development in Japan, Turkey, Egypt, and Peru. New Brunswick, NJ: Transaction Books.
- Tsunoda, Ryusaku, William Theodore de Bary, and Donald Keene, eds. 1958. Sources of the Japanese Tradition. New York: Columbia University Press.
- Tsusho Sangyo Sho Sangyo Seisaku Kigyo Kodoka (1990), Sogo Keijeiryoku Shihyo: Seizogyo hen (Indicators of General Management Strength), Okurasho Insatsu Kyoku, Tokyo.
- Tucker, David J., Jitendra V. Singh, and Agnes G. Meinhard. (1987). Founding Conditions, Environmental Change and Organizational Mortality. Manuscript. School of Social Work, McMaster University.
- Tucker, David J., Jitendra V. Singh, and Agnes G. Meinhard. (1990). Organizational Form, Population Dynamics and Institutional Change: A Study of Birth Selection Processes. Academy of Management Journal 33:151-78.
- Tucker, David J., Jitendra V. Singh, and Robert J. House. (1984). The Liability of Newness in a Population of Voluntary Social Service Organizations . Paper

presented at the 49th American Sociological Association Annual Meeting, San Antonio, Tex.

- Tucker, David, Jitendra Singh, Agnes Meinhard, and Robert House. (1988). Ecological and Institutional Sources of Change in Organizational Populations. In Ecological Models of Organizations, ed. G. R. Carroll, 127-51. Cambridge, Mass.: Ballinger.
- Tuma, Nancy Brandon, and Andrew J. Grimes . (1981) . A Comparison of Models of Role Orientations of Professionals in a Research-Oriented University. Administrative Science Quarterly 26:187-206.
- Tuma, Nancy Brandon, and Michael T. Hannan. (1984). Social Dynamics: Models and Methods. Orlando, FL: Academic Press.
- Tung, R. L. 1982. Selection and training procedures of U.S., European, and Japanese multinationals. California Management Review, 25(1): 57-71.
- Turk, Herman. 1977. Organizations in Modern Life. San Francisco: Jossey-Bass.
- Tushman, M. L. 1977. Communications across organizational boundaries: Special boundary roles in the innovative process. Administrative Science Quarterly, 22: 587-605.
- Tushman, M. L. 1979. Impact of perceived environmental variability on patterns of communication. Academy of Management Journal, 22: 482-500.
- Tushman, Michael L. (1978). "Technical Communication in Research and Development Laboratories: Impact of Project Work Characteristics", Academy of Management Journal, 21, pp. 624-45.
- Tushman, Michael L. and Nadler, D.A. (1978). "Information Processing as an Integrating Concept in Organizational Design", Academy of Management Review, 3, pp. 613-24.
- Tushman, Michael L. and Romanelli, E. (1986). "Organizational Evolution: A Metamorphosis Model of Convergence and Reorientation", in L.L. Cummings and B.M. Staw (eds.), Research in Organizational Behavior, 7. Greenwich, CT: JAI Press, pp. 177-222.
- Ueda, Yoshiaki. 1983 . Kigyo shudan ni okeru yakuin ken-nin no keiryo bunseki: Kigyokan kankei no sokutei (The mathematical analysis of interlocking directorates in enterprise groups: Measurement of interfirm relationships). Shoken Keizai 146: 25-48.
- Ueda, Yoshiaki. 1986. Intercorporate Networks in Japan: A Study of Interlocking Directorates in Modern Large Corporations. Shoken Keizai 157:236-54.
- UNCTC (United Nations Centre on Transnational Corporations) (1988).
- United Nations. (Various years.) International Trade Statistics. New York: United Nations Publications.

- Van de Ven, A. H. 1986. Central problems in the management of innovation. Management Science, 32: 590-607.
- Van de Ven, A. H., Delbecq, A. L. and Koenig, R. (1976). "Determinants of Coordination Modes within Organizations", American Sociological Review, 41, pp. 322-38.
- Van de Ven, A.H. and Walker, G. (1984). "The Dynamics of Interorganizational Coordination", Administrative Science Quarterly, 29, pp. 598-621.
- Van Maanen, J. (1975). "Police Socialization: A Longitudinal Examination of Job Attitudes in an Urban Police Department", Administrative Science Quarterly, 20, pp. 207-28.
- Van Maanen, J. (1988). Tales of the Field. University of Chicago Press.
- Van Maanen, J. (1989). "Whistle While You Work", paper presented at the American Anthropological Association Annual Meeting, November. Washington DC.
- Van Maanen, J. (1990a). "The Smile Factory", unpublished paper, MIT.
- Van Maanen, J. (1990b). "Trade Secrets", unpublished paper, MIT.
- Van Maanen, J. and Barley, S. (1984). "Occupational Communities", in B. Staw and L.L. Cummings (eds.) Research in Organization Behavior, Vol. 6. Greenwich, CT: JAI Press, pp. 287-365.
- Van Maanen, J. and Kunda, G. (1989). "Real Feelings", in B. Staw and L.L. Cummings (eds.) Research in Organization Behavior, Vol. 11. Greenwich, CT: JAI Press, pp. 43-104.
- Van Maanen, J. and Schein, E.H. (1979). "Toward a Theory of Organizational Socialization", in B. Staw and L.L. Cummings (eds.) Research in Organization Behavior, Vol. 1. Greenwich, CT: JAI Press, pp. 209-69.
- Vancil, R. (1973). "What Kind of Management Control Do You Need?", Harvard Business Review, March-April, pp. 75-86.
- Vancil, R. F. 1980. Decentralization: Managerial ambiguity by design. New York: Financial Executives Research Foundation.
- Vernon, R. (1966). "International Investment and International Trade in the Product Cycle." Quarterly Journal of Economics 80:2, pp. 190-207.
- Vernon, R. (1971). Sovereignty at Bay: The Multinational Spread of U.S. Enterprise. New York: Basic Books.
- Vernon, R. (1979). "The Product Cycle Hypothesis in a New International Environment", Oxford Bulletin of Economics and Statistics, No. 41, pp. 255-67.

- Vogel, E.F. (1979). Japan as Number One. Cambridge, Mass: Harvard University Press.
- Wakasugi, Ryuhei (1989), "Kenkyu Kaihatsu no soshiki to KodO'(The Conduct and Organization of R&D), in K. Imai and Komiya (eds), Nihon no Kigyo, Tokyo Daigaku Shuppankai, Tokyo.
- Wakasugi, Ryuhei (1989), "Kenkyu Kaihatsu no soshiki to KodO'(The Conduct and Organization of R&D), in K. Imai and Komiya (eds), Nihon no Kigyo, Tokyo Daigaku Shuppankai, Tokyo.
- Walter, I., and Murray, T. (1988). Handbook of International Business. 2nd edition. New York: Wiley.
- Warren, R.L. (1967). "The Interorganizational Field as a Focus for Investigation", Administrative Science Quarterly, 12, pp. 369-419.
- Weber, Max. (1919) 1946. Science as a Vocation. In From Max Weber: Essays in So-
- Weber, Max. (1922) 1963 . The Sociology of Religion. Boston: Beacon Press.
- Weber, Max. (1922) 1978. Economy and Society. Berkeley: University of California Press.
- Weber, Max. (1927) 1950. General Economic History. Glencoe, Ill .: Free Press .
- Weber, Max. (1946). From Max Weber: Essays in Sociology. H.H. Gerth and C. Wright Mills (eds). New York: Oxford University Press.
- Weber, Max. (1947). The Theory of Social and Economic Organization. New York: Oxford University Press.
- Weber, Max. (1952). The Protestant Ethic and the Spirit of Capitalism. New York: Scribner.
- Weick, K.E. (1969) 1979. The Social Psychology of Organizing. 2nd ed, New York: Random House.
- Weick, K.E., and Gilfillan, D.P. (1971). "Fate of Arbitrary Traditions in a Laboratory Microculture", Journal of Personality and Social Psychology, 17, pp. 179-91.
- Weick, Karl E. (1976). Educational Organizations as Loosely Coupled Systems. Administrative Science Quarterly 21:1-19.
- Wehrich, H. (1990). "Europe 1992: What the Future May Hold", The Executive, 4:2, pp. 7-18.
- Welge, M. (1987). "Subsidiary Autonomy in Multinational Corporations", in D. Van Den Bulcke (ed.) International Business Issues, proceedings of the 13th annual meeting of EIBA, Antwerp.

- Westney, D. Eleanor. (1978). Organizational Development in Meiji Japan: A Study of Prefectural Variation in Modernization, 1880-1915. Ph.D. Dissertation, Department of Sociology, Princeton University.
- Westney, D. Eleanor. (1982). "The Emulation of Western Organizations in Meiji Japan: The Case of the Paris Prefecture of Police and the Keishi-cho." Journal of Japanese Studies 8(2): 307-42.
- Westney, D. Eleanor. (1987). Imitation and Innovation: The Transfer of Western Organizational Patterns to Meiji Japan. Cambridge, MA: Harvard University Press.
- Westney, D. Eleanor. (1988). "Isomorphism, Institutionalization and the Multinational Enterprise", paper presented at the Academy of International Business Annual Meetings, October, San Diego, California.
- Westney, D. Eleanor (1988b), "Domestic and Foreign Learning Curves in Managing International Cooperative Strategies", in F. Contractor and P. Lorange (eds.) Cooperative Strategies in International Business. Lexington Books, Lexington, Mass, 189-210.
- Westney, D. Eleanor. (1989). Institutionalization Theory and the Organizational Dilemma of Multinational Enterprise. Working paper. Sloan School of Management, MIT.
- Westney, D. Eleanor. (1990). "Building the National Communications System: Adopting and Adapting Western Organizational Models in Meiji Japan." Chapter 2, pp. 39-59 in The Ambivalence of Nationalism: Modern Japan between East and West, edited by James W. White, Michio Umegaki and Thomas R. H. Havens. Lanham, MD: University Press of America.
- Westney, D. Eleanor (1993a), "Country Patterns in R&D Organization: The United States and Japan", in Bruce Kogut (ed.), Country Competitiveness and the Organizing of Work, Oxford University Press.
- Westney, D. Eleanor, and Sakakibara, Kiyonori, (1985), "The Organization and Careers of Engineers in the Computer Industry in Japan and the United States", Working Paper, MIT-Japan Science and Technology Program, Massachusetts Institute of Technology.
- White, M. (1987). The Japanese Educational Challenge. New York: Free Press.
- White, R.E. and Poynter, T.A. (1985). "Strategies for Foreign-Owned Subsidiaries in Canada", Business Quarterly.
- White, R.E. and Poynter, T.A. (1990). "Organizing for World-wide Advantage", in C.A. Bartlett, Y. Doz and G. Hedlund (eds.) Managing the Global Firm. London: Routledge, pp. 95-116.
- Wholey, D.R. and Brittain, J.W. (1986). "Organizational Ecology: Findings and Implications", Academy of Management Review, 11, pp. 513-33.

- Wilkins, M. (1970). The Emergence of the Multinational Enterprise: American Business Abroad from Colonial Era to 1914. Cambridge, Mass: Harvard University Press.
- Williams, C.R. (1967). "Regional Management Overseas", Harvard Business Review, 45, pp. 87-91.
- Williamson, Oliver E. (1970). Corporate Control and Business Behavior. Englewood Cliffs, NJ.: Prentice Hall.
- Williamson, Oliver E. (1975). Markets and Hierarchies: Analysis and Antitrust Implications. New York: Free Press.
- Williamson, Oliver E. (1981). "The Economics of Organization: The Transaction Cost Approach", American Journal of Sociology, 87, November, pp. 548-577.
- Williamson, O. E. (1985). The economic institutions of capitalism. New York: Free Press.
- Wilson, B.D. (1979, 1980). Divestment of Foreign Subsidiaries. Ann Arbor, Mich: UMI Research Press.
- Winter, S. (1981). "Attention Allocation and Input Proportions", Journal of Economic Behavior and Organization, 2, pp. 31-46.
- Womack, J.P., Jones, D.T., and Roos, D. (1990). The Machine that Changed the World. New York: Rawson Associates.
- Wood, R. and Bandura, A. (1989). "Social Cognitive Theory of Organizational Management", Academy of Management Review, 14, pp. 361-384.
- Woodward, J. (1965). Industrial Organization: Theory and Practice. New York: Oxford University Press.
- Wray, William D., ed. 1989. Managing Industrial Enterprise: Cases from Japan's Prewar Experience. Cambridge, MA: Council on East Asian Studies, Harvard University.
- Yagi, Yosuke. (1992). The Strategic Roles of HRM in Japanese firms: A Case Study of a Steel Company. Cambridge, MA: Sloan School of Management, MIT, unpublished masters thesis.
- Yamamura, Kozo (1986), "Joint Research and Antitrust: Japanese vs. American Strategies", in Hugh Patrick (ed.), Japan's High Technology Industries: Lessons and Limitations of Industrial Policy, University of Washington Press, Seattle, 171-209.
- Yano, Hironori. General Manager, Public Communications Office, Toshiba Corp., "Human Resource Management in a Global Corporation: The Example of Toshiba Presentation at International Symposium on Pacific Asian Business."
- Yasuoka, Shigeaki. 1986. "The Early History of Japanese Companies." Japanese Yearbook on Business History 3: 1-25.

- Yates, J. (1989). Control Through Communication. Baltimore: Johns Hopkins University Press.
- Yip, G.S. (1989). "Global strategy... in a world of nations?", Sloan Management Review, Fall, pp. 29-41.
- Yoshino, Toshihiko. (1977). "The Creation of the Bank of Japan--Its Western Origin and Adaptation." Developing Economies 15(4): 381-401.
- Yui, Tsunehiko. (1968). "Meiji Shonen no Kaisha Kigyo no Ichi Kosatsu: Kaisha Chishiki no Donyu to sono Rikai ni tsuite." Pp. 127-48 in Shihonshugi no Keisei to Hatten, edited by Hisao Otsuka, Tomoo Matsuda, Yoshio Ando and Yoshiyuki Sekiguchi. Tokyo: Tokyo Daigaku Shuppankai.
- Zald, M.N. (1970). "Political Economy: A Framework for Comparative Analysis", In M.N. Zald (ed.) Power in Organizations. Nashville, Tenn: Vanderbilt University Press, pp. 221-61.
- Zeira, Y. (1976). Management development in ethnocentric multinational corporations. California Management Review, 18(4): 34-42.
- Zeira, Y., & Harari, E. (1979). Host-country organizations and expatriate managers in Europe. California Management Review, 21(3): 40-50.
- Zeira, Y., & Shenkar, O. (1986). Personnel decision-making in wholly-owned foreign subsidiaries and in international joint ventures. Working Paper No. 45, Multinational Enterprises Programme, International Labour Office, Geneva.
- Zeitz, G. (1980). "Interorganizational Dialects", Administrative Science Quarterly, 25, pp. 72-88.
- Zelditch, Jr., Morris. 1971. "Intelligible Comparisons." Pp. 267-307 in Comparative Methods in Sociology: Essays on Trends and Applications, edited by Ivan Vallier. Berkeley: University of California Press.
- Zeleny, Y.M. (1987). "Management Support Systems: Towards Integrated Knowledge Management", Human Systems Management, 7, pp. 59-70.
- Zucker, Lynne G. (1977). "The Role of Institutionalization in Cultural Persistence", American Sociological Review, 42, pp. 726-43.
- Zucker, Lynne G. (1983). "Organization as Institutions", in S. Bacharach (ed.) Advances in Organizational Theory and Research, Vol. 2. Greenwich: JAI Press, pp. 1-43.
- Zucker, Lynne G. (1987). "Institutional Theories of Organization", Annual Review of Sociology, 13, pp. 443-64.
- Zucker, Lynne G., (ed.) (1988). Institutional Patterns and Organizations: Culture and Environment. Cambridge, Mass: Ballinger.



M.I.T.

Sloan School of Management

**AMERICAN SUBSIDIARIES AND JOINT VENTURES IN JAPAN:
BENCHMARKING
PERSONNEL PRACTICES AND STRATEGIC APPROACHES**

Thank you for your participation in this survey. This study focuses on American subsidiaries and joint ventures in Japan and their strategy and personnel practices. It is part of a larger international study which is the first of its type to collect and analyze information about specific personnel practices in foreign affiliated firms as related to various organizational and strategic characteristics.

The results from this survey will allow firms to benchmark their practices against those of other firms of similar size and orientation. All participating firms will be eligible to receive copies of all research reports from this project. Of course, individual responses will be kept in the strictest confidence, and questionnaires are coded to maintain anonymity.

1. If possible, please have the Subsidiary/Joint Venture Head or HRM Head fill out this questionnaire. However, please feel free to query other personnel at any point, particularly with regard to employment practices in the American headquarters.

2. This questionnaire has been carefully designed to take only 25-30 minutes. To minimize the time required by you, I have already collected data on your company's current employee count, foreign investment, and number of non-national employees. In addition, virtually the entire questionnaire uses a checklist format which further minimizes the time required to fill it out.

3. If possible, please return this questionnaire in the enclosed envelope by Friday, August 7, so that it may go back to America during OBon. Data will be entered at MIT in August and September, and preliminary analyses will be sent out to participating firms in late October or November.

Both an English version and a Japanese version are enclosed for your convenience. Please feel free to complete whichever one you prefer. (It is not necessary to complete both.)

Thank you for your cooperation, I look forward to sending you the results in the Fall.

Sincerely,

Patricia Robinson
Ph.D. Candidate, M.I.T.
Sloan School of Management
Fulbright Researcher
Hitotsubashi University
Tel. 0425-71-3144
Fax. 0425-77-2495

•Please give your position: _____

Kunitachi 2-15-27-107
Tokyo 186

•Length of time in that position: _____ years _____ months.

(A)

With regard to the strategic role of your subsidiary/joint venture, does your American parent expect you to:

- | | |
|---|---------------|
| 1. Gain Marketshare in Japan? | ___Yes;___No. |
| 2. Be financially profitable in your own right? | ___Yes;___No. |
| 3. Develop Products for sale in Japan? | ___Yes;___No. |
| 4. Develop Products for Worldwide Application? | ___Yes;___No. |
| 5. Serve as a Listening Post on Japan? | ___Yes;___No. |

HUMAN RESOURCE MANAGEMENT PRACTICES FOR MANAGERS

Please indicate the extent to which the following Human Resource Management policies, practices, and systems are used or emphasized with regard to managers in both your subsidiary firm/ joint venture in Japan and in your parent firm in the U.S.

Please estimate these practices on a 1-7 scale by circling one number between 1 and 7 with

1-2: *Little use or emphasis*

3-5: *Moderate use or emphasis*

6-7: *High use or emphasis.*

X: *This practice is not used here.*

MANAGEMENT TRACK EMPLOYEES

(B) RECRUITMENT AND SELECTION

	<u>Japan Subsidiary Practices</u>							<u>American Parent Company Practices</u>							
	<i>Emphasis</i>							<i>Emphasis</i>							
	<i>Low</i>	1	2	3	4	5	<i>High</i>	<i>Low</i>	1	2	3	4	5	6	<i>High</i>
1. Use of recruitment from schools	X							X							
2. Use of recruitment from former or present employees of other companies	X							X							
3. Use of recruitment from within (post job openings within company)	X							X							
4. Use of objective skill ability tests	X							X							
5. Use of personality tests	X							X							
6. Use of interviews by HRM staff and managers	X							X							
7. Use of references	X							X							
8. Recruitment from certain schools only	X							X							
9. Emphasis on specific technical skills	X							X							
10. Emphasis on creativity/innovativeness	X							X							
11. Emphasis on general learning abilities	X							X							
12. Emphasis on compliance/obedience	X							X							
13. Emphasis on ability to fit into the firm's culture	X							X							
14. Emphasis on willingness to cooperate	X							X							
15. Emphasis on willingness to work hard	X							X							

(C) PERFORMANCE APPRAISAL

1. Use of formal/structured systems of appraisal	X							X							
2. Use of informal systems of appraisal	X							X							
3. Use of numerical performance indicators	X							X							
4. Use of subjective judgment in performance appraisal	X							X							
5. Use of self-assessment evaluations	X							X							
6. Use of long term (one year+) performance indicators	X							X							
7. Use of multiple measures of performance	X							X							
8. Use of management by objectives system	X							X							
9. Use of performance standards	X							X							
10. Use of trait measurement system	X							X							
11. Use for merit/pay bonus allocations	X							X							
12. Use for feedback & motivation	X							X							
13. Use for clarifying performance expectations	X							X							
14. Use for development of abilities	X							X							

Please estimate these practices on a 1-7 scale by circling one number between 1 and 7 with

1-2: *Little use or emphasis*

3-5: *Moderate use or emphasis*

6-7: *High use or emphasis.*

X: *This practice is not used here.*

MANAGEMENT TRACK EMPLOYEES

Japan
Subsidiary
Practices

American Parent
Company
Practices

(D) PROVIDING FEEDBACK TO EMPLOYEES

	<i>Emphasis</i>							<i>Emphasis</i>								
	<i>Low</i>					<i>High</i>	<i>Low</i>					<i>High</i>				
1. Use of interviews for feedback	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
2. Use of outcome (results) oriented feedback	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
3. Use of process oriented feedback	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
4. Use of reports/graphs for feedback	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7

(E) COMPENSATION AND BENEFITS

1. Use of individual incentive plans	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
2. Use of group incentive plans	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
3. Use of stock ownership plans	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
4. Use of formal job evaluation systems	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
5. Use of extra pay for multiple skills	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
6. Use of rewards for efficiency (costs, quantity)	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
7. Use of rewards for innovation	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
8. Use of rewards for quality of work	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
9. Use of rewards for personal development	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
10. Emphasis on rewarding high performers	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
11. Emphasis on minimizing felt pay inequities	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
12. Emphasis on paying above market compensation	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
13. Emphasis on paying above market benefits	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7

(F) TRAINING AND DEVELOPMENT

1. Use of in-house classroom training	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
2. Use of informal coaching by supervisors	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
3. Use of outside (external) classroom training	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
4. Use of individual development plans	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
5. Use of creativity enhancement training	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
6. Use of technical knowledge training	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
7. Use of general problem solving training	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
8. Use of interpersonal skills training	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
9. Use of foreign language training	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
10. Use of formal mentoring programs	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
11. Use of entry level training for employees	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
12. Use of international training for expatriates	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7

(G) PERFORMANCE IMPROVEMENT PROGRAMS

1. Use of individual suggestions system	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
2. Use of quality circle teams	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
3. Use of TQC (Quality Circle) programs	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
4. Use of self-managed work teams	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7
5. Use of other types of performance improvement teams	X	1	2	3	4	5	6	7	X	1	2	3	4	5	6	7

(H) Please estimate the following about the American subsidiary/ joint venture in Japan.

1. Percentage of total worldwide company sales from your Japanese operations: A. 0-9% B. 10-19% C. 20-49% D. 50-79% E. 80-100%
 2. Approximately what proportion of products sold in Japan are manufactured in Japan? A. 0-9% B. 10-19% C. 20-49% D. 50-79% E. 80-100%
 3. Estimated % of workforce that are Managers (Ka-cho level and above): A. 0-9% B. 10-19% C. 20-49% D. 50-79% E. 80-100%
 4. Percentage of *Non-Japanese* expatriate managers currently working in Japanese subsidiary: A. 0% B. 1-4% C. 5-9% D. 10-19% E. 20-32% F. 33%+
 5. Number of years current HRM Head has served in that position: A. Less than 1 yr. B. 1-2 years C. 3-5 yrs D. 6-9 yrs E. 10+ yrs
 6. Average Tenure of HRM heads in this subsidiary: A. Less than 1 yr. B. 1-2 yrs C. 3-5 yrs D. 6-9 yrs E. 10+ yrs
- Years of experience Subsidiary Head had previously in:
7. Parent company Headquarters in America: A. None B. Less than 2 yrs. C. 3-5 yrs D. 6-9 yrs E. 10+ yrs
 8. Other Non-American subsidiaries: A. None B. Less than 2 yrs. C. 3-5 yrs D. 6-9 yrs E. 10+ yrs
- Years of experience HRM Head had previously in:
9. American parent HRM Unit: A. None B. Less than 2 yrs. C. 3-5 yrs D. 6-9 yrs E. 10+ yrs
 10. American parent outside of HRM Unit: A. None B. Less than 2 yrs. C. 3-5 yrs D. 6-9 yrs E. 10+ yrs
 11. Other Non-American subsidiaries: A. None B. Less than 2 yrs. C. 3-5 yrs D. 6-9 yrs E. 10+ yrs
12. Amount of training for overseas assignment given to subsidiary head prior to assignment: A. None B. 1-2 days C. 3-6 days D. 7-13 days E. 14+ days
 13. Approximate number of employees at time American affiliate began operations in Japan: A. 1-19 B. 20-49 C. 50-99 D. 100-299 E. 300-499 F. 500+
 14. At the time of initial operations in Japan, what proportion of top management was Non-Japanese? A. 0-9% B. 10-19% C. 20-49% D. 50-79% E. 80-100%
 15. At the time the American affiliate began operations in Japan, what proportion of total employees were Non-Japanese? A. 0-9% B. 10-19% C. 20-49% D. 50-79% E. 80-100%
 16. Year parent company founded in U.S.: A. Before 1900 B. 1900-1932 C. 1933-1949 D. 1950-1973 E. 1974+
 17. Year American parent first began operating in overseas markets outside US. A. Before 1900 B. 1900-1932 C. 1933-1949 D. 1950-1973 E. 1974+
 18. Year American parent first began operations in Japan. A. Before 1971 B. 1971-73 C. 1974-79 D. 1980-85 E. 1986+
 19. Year oldest component of operations (e.g. Japanese joint venture partner or acquisition) began operations in Japan: A. Before 1900 B. 1900-1932 C. 1933-1949 D. 1950-1973 E. 1974+
 20. Approximate equity holding of American parent at time American affiliate began operations in Japan: A. 0-9% B. 10-19% C. 20-49% D. 50-79% E. 80-100%

(J) Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your American parent company's "HQ" (headquarter's) characteristics.

	Low	High
1. Clarity of the American Parent company's culture or managerial style	1 2 3 4 5 6 7	
2. Clarity of American Parent company's future goals	1 2 3 4 5 6 7	
3. Clarity of American Parent company's product domain	1 2 3 4 5 6 7	
4. Degree to which American Parent firm's culture is supported by practices and behaviors	1 2 3 4 5 6 7	
5. Degree to which American parent's HRM division is involved with HQ strategic planning	1 2 3 4 5 6 7	
6. Power of American parent's HRM unit in implementation of HQ strategic plans	1 2 3 4 5 6 7	
7. Strategic Importance of Subsidiary to American Parent	1 2 3 4 5 6 7	
8. Company's desire for consistency among HRM/Personnel practices worldwide	1 2 3 4 5 6 7	
9. Amount of Am. Parent control over Japanese subsidiary's general management policies	1 2 3 4 5 6 7	
10. Amount of Am. Parent control over Japanese subsidiary's Personnel policies and practices	1 2 3 4 5 6 7	
11. Amount of Am. Parent Control over Japanese subsidiary's <u>total</u> budgeting	1 2 3 4 5 6 7	
12. Amount of Am. Parent Control over Japanese subsidiary's <u>HRM</u> budget	1 2 3 4 5 6 7	
13. Amount of budget control your Am. Parent firm typically has over its foreign subsidiaries	1 2 3 4 5 6 7	

Please indicate on the following 1 to 7 scale with 1 indicating LOW and 7 indicating HIGH the following information about your Japanese subsidiary / joint venture's characteristics.

	Low	High
14. Degree to which major innovations in <u>product design</u> are emphasized in your firm	1 2 3 4 5 6 7	
15. Degree to which major innovations in <u>process technology</u> emphasized in your firm	1 2 3 4 5 6 7	
16. Degree to which incremental improvements in <u>work processes</u> emphasized in firm	1 2 3 4 5 6 7	
17. Degree to which incremental improvements in <u>products</u> emphasized in your firm	1 2 3 4 5 6 7	
18. Degree of uncertainty facing the subsidiary with regard to future competition	1 2 3 4 5 6 7	
19. Degree of uncertainty facing the subsidiary with regard to future <u>economic</u> trends in the Japanese market	1 2 3 4 5 6 7	
20. Degree of uncertainty facing the subsidiary with regard to future <u>personnel</u> trends in the Japanese market	1 2 3 4 5 6 7	
21. Amount of change needed to market your products in Japan	1 2 3 4 5 6 7	
22. Degree to which local products are similar to existing Japanese products	1 2 3 4 5 6 7	
23. Amount of technological change your products are subject to in a 5 year period	1 2 3 4 5 6 7	

(K) Please estimate the amount of contact either formal or informal of the Japanese subsidiary head and the subsidiary HRM head with the following possible sources of information about Personnel Practices.

Please circle one number on the following 1-7 scale with

1: Never

2: Once per year

3: Twice per year

4: 4-6 Times per year

5: Monthly

6: Weekly

7: Daily

	Subsidiary Head	Subsidiary HRM Head
1. Headquarters top level management in the U.S.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
2. Headquarters HRM unit in the U.S.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
3. Japanese joint venture partner (if you have one)	1 2 3 4 5 6 7	1 2 3 4 5 6 7
4. Japanese vendors or suppliers	1 2 3 4 5 6 7	1 2 3 4 5 6 7
5. Heads of Japanese companies in Japan	1 2 3 4 5 6 7	1 2 3 4 5 6 7
6. HRM personnel of Japanese companies in Japan	1 2 3 4 5 6 7	1 2 3 4 5 6 7
7. American heads of other U.S. companies in Japan	1 2 3 4 5 6 7	1 2 3 4 5 6 7
8. American HRM heads in other U.S. firms in Japan	1 2 3 4 5 6 7	1 2 3 4 5 6 7
9. Japanese consulting firms in Japan	1 2 3 4 5 6 7	1 2 3 4 5 6 7
10. American consulting firms in Japan	1 2 3 4 5 6 7	1 2 3 4 5 6 7
11. American Chamber of Commerce in Japan	1 2 3 4 5 6 7	1 2 3 4 5 6 7
12. American trade associations in Japan	1 2 3 4 5 6 7	1 2 3 4 5 6 7
13. Managers in subsidiaries located in other countries	1 2 3 4 5 6 7	1 2 3 4 5 6 7

(L) How important is it that your personal performance be highly regarded by the following people?

	<i>Not Important</i>	<i>Important</i>
1. Executive to whom you report directly	1 2 3 4 5 6 7	
2. Your immediate subordinates	1 2 3 4 5 6 7	
3. Local Japanese customers	1 2 3 4 5 6 7	
4. Other managers in comparable positions in the company	1 2 3 4 5 6 7	
5. Managers in comparable positions in Japanese firms	1 2 3 4 5 6 7	
6. Mngrs in comparable positions in other Non-Japanese firms in Japan	1 2 3 4 5 6 7	
7. Professional Colleagues	1 2 3 4 5 6 7	
8. Other: _____	1 2 3 4 5 6 7	

(M) To whom do you report directly? (Please give person's position and location.)

(N)

1. In your company, are the Subsidiary Head and the Subsidiary HRM Head the same person? __ Yes; __ No.
2. Are you in a joint venture (JV) partnership with a local Japanese firm? __ Yes; __ No.
3. Does your subsidiary/JV export products from Japan to other parts of the firm? __ Yes; __ No.
4. Have you engaged in systematic benchmarking of Japanese firms? __ Yes; __ No.
5. Have you engaged in systematic benchmarking of Non-Japanese multinational firms in Japan? __ Yes; __ No.
6. Does your subsidiary/JV refer to surveys of Personnel practices in Japanese firms? __ Yes; __ No.
7. Does your subsidiary/JV refer to surveys of Personnel practices in Non-Japanese multinational firms in Japan? __ Yes; __ No.
8. Has your subsidiary/JV participated in one or more surveys of Personnel practices in Non-Japanese firms in Japan? __ Yes; __ No.
9. Has your subsidiary/JV hosted groups of American managers to examine Japanese management practices? __ Yes; __ No.
10. Have you introduced any of your American parent firm's products into the Japanese market without making any changes in them? __ Yes; __ No.
11. Do you manufacture or develop any products for the Japanese market which you do not sell in America? __ Yes; __ No.
12. Nationality of Subsidiary/Joint Venture Head: ____ Japanese; ____ Non-Japanese.
13. Nationality of subsidiary/Joint Venture HRM Head: ____ Japanese; ____ Non-Japanese.
14. Subsidiary/JV Employee Headcount controlled by: ____ Parent; ____ Subsidiary; ____ Jointly.
15. To which market does your subsidiary/JV sell primarily? ____ Japan; ____ U.S.; ____ Asia; ____ Other.

(P) Who handles the following functions?

	Subsidiary/JV in Japan	Headquarters in the U.S.	Regional Asian Headquarters	Other
1. Sales	_____	_____	_____	_____
2. Distribution	_____	_____	_____	_____
3. After-Sales Service	_____	_____	_____	_____
4. Marketing	_____	_____	_____	_____
5. R&D	_____	_____	_____	_____
6. Manufacturing	_____	_____	_____	_____
7. HRM	_____	_____	_____	_____

(Q) In comparison with *other subsidiaries* of the American parent, how would you rate your Japanese subsidiary/ joint venture's performance along each of the following dimensions? Also, in the space to the right, please check those performance measures for which American parent firm sets clear targets or specific goals.

	<i>Considerably BELOW Average</i>	<i>Average</i>	<i>Considerably ABOVE Average</i>	Please check those Perform. Measures for which American Parent Sets Clear Targets
1. Sales Growth Rate	1 2 3 4 5 6 7			___
2. Market Share	1 2 3 4 5 6 7			___
3. Operating Profits	1 2 3 4 5 6 7			___
4. Return on Investment	1 2 3 4 5 6 7			___
5. Contribution to Consolidated Profits	1 2 3 4 5 6 7			___
6. Contribution to Overall Strategic Positioning	1 2 3 4 5 6 7			___
7. Market Development	1 2 3 4 5 6 7			___
8. Cost Reduction	1 2 3 4 5 6 7			___
9. New Product Development	1 2 3 4 5 6 7			___
10. Job Satisfaction of Employees	1 2 3 4 5 6 7			___
11. Turnover Rate of Employees	1 2 3 4 5 6 7			___
12. Absenteeism Rate of Employees	1 2 3 4 5 6 7			___
13. Employee Development	1 2 3 4 5 6 7			___

(R) Please agree or disagree to the following statements on a scale of 1-7:

	<i>Disagree</i>	<i>Agree</i>
1. Competition in the <u>Japanese market</u> is quite strong from <u>Japanese firms</u>	1 2 3 4 5 6 7	
2. Competition in the <u>Japanese market</u> is quite strong from <u>Non-Japanese Multinationals</u>	1 2 3 4 5 6 7	
3. Competition in <u>Global Markets</u> is quite strong from <u>Japanese firms</u>	1 2 3 4 5 6 7	
4. Competition in <u>Global Markets</u> is quite strong from <u>Non-Japanese Multinational Firms</u>	1 2 3 4 5 6 7	
5. Personnel Practices in this subsidiary have changed very little since its founding	1 2 3 4 5 6 7	
6. Personnel Practices in this subsidiary are in a period of great change right now	1 2 3 4 5 6 7	
7. Personnel Practices in <u>other Non-Japanese Multinational Firms in Japan</u> are in a period of great change right now	1 2 3 4 5 6 7	
8. Personnel Practices in <u>Japanese firms</u> are in a period of great change right now	1 2 3 4 5 6 7	
9. Japanese Personnel Practices are evolving toward American patterns	1 2 3 4 5 6 7	
10. The new generation of Japanese employee is looking for more American style HRM patterns	1 2 3 4 5 6 7	
11. Personnel Practices in your <u>Headquarters</u> are seen as quite advanced	1 2 3 4 5 6 7	
12. Personnel Practices in <u>the surrounding Japanese firms</u> are seen as quite advanced	1 2 3 4 5 6 7	
13. Personnel practices in <u>other Non-Japanese Multinationals in Japan</u> are seen as quite advanced	1 2 3 4 5 6 7	
14. Leading Edge <u>International Personnel Practices</u> can be found in <u>Japanese Multinationals</u>	1 2 3 4 5 6 7	
15. Leading Edge <u>International Personnel Practices</u> can be found in <u>American Multinationals</u>	1 2 3 4 5 6 7	
16. Personnel Practices in Japanese subsidiaries should follow established patterns in Japan	1 2 3 4 5 6 7	
17. The ideal HRM System is a hybrid that blends Japanese and western practices	1 2 3 4 5 6 7	
18. HRM in <u>Non-Japanese Multinational Firms</u> in Japan will be a hybrid in the future	1 2 3 4 5 6 7	
19. Within the <u>parent firm</u> , HRM is regarded as a strategically important function	1 2 3 4 5 6 7	
20. Within your <u>subsidiary</u> , HRM is regarded as a strategically important function	1 2 3 4 5 6 7	
21. Your subsidiary's HRM heads tend to spend most of their careers in HRM	1 2 3 4 5 6 7	
22. Your subsidiary's HRM heads tend to be rotated into the position	1 2 3 4 5 6 7	

THANK YOU FOR YOUR PARTICIPATION IN THIS SURVEY!

在日外資系企業の人的資源管理に関する質問調査票

調査担当者

パトリシア・ロビンソン

マサチューセッツ工科大学スローン経営大学院

一橋大学客員研究員

(研究室) 〒186 国立市中2-1

電話：0425-71-3144 ファクシミリ：0425-77-2495

(自宅) 〒186 国立市東2-15-27-107

電話：0425-71-3144

■ご回答にあたってのお願い（事前に必ずお読みください）

- (1) この調査は在日外資系企業における人的資源管理の特徴及び現状を、アメリカ企業との比較といった観点から明らかにすることを目的としております。この調査は学術的な論文のためのデータを収集するためのもので、ご回答は集計した上で統計的に処理いたします。個別の回答を公表することは一切ございません。ご協力いただきました企業ならびに回答者ご自身に対しいささかのご迷惑もおかけしないよう、万全の配慮を払いますので、安心してお答えください。なお、ご協力いただきました企業の皆様には、この研究プロジェクトの調査結果とそれをまとめたレポートを調査終了後お送りいたします。
- (2) ご回答はなるべく在日外資系企業のトップの方かもしくは人的資源管理部門（人事部など）のトップの方をお願いしております。なお、英文のものと、日本文のものと2種類同封されておりますので、どちらか一方をお選びください。
- (3) 質問の多くは適当な箇所に簡単な数字もしくは○印をご記入いただく形式となっております。質問にお答えいただく際に、疑問に思われた点やコメントなどございましたら、余白にご自由にお書きください。回答所用時間は25分から30分程度でございます。
- (4) 質問の中には御社の米国本社に関わる質問も一部含まれております。もし御回答者ご自身が米国本社の人的資源管理の現状をあまり御存知ない場合は、適当な方におたずねいただいた上でご回答いただければ幸いです。なお、本文中用いている貴社とは在日現地法人をさします。
- (5) ご回答いただきましたアンケート用紙は、恐れ入りますが、なるべく8月7日(金)までに同封の返送用封筒にてご返送いただければ幸いです。調査研究担当者は「お盆休み」の前までにアメリカに戻り、統計処理を進める予定でおります。
- (6) ご多忙中、誠に恐縮ではございますが、趣旨ご理解の上、ご協力のほどお願い申し上げます。

・ご回答者の職位名は？

・貴方がその職位に就かれてどのくらいですか？

_____ 年 _____ 月

(A)貴社（在日現地法人）の戦略的役割についておたずねします。

アメリカ本社が貴社に期待しているのは。。。

- | | |
|-----------------------|---------------------|
| 1. 日本におけるマーケット・シェアの獲得 | _____ はい； _____ いいえ |
| 2. 独立採算による利益追求 | _____ はい； _____ いいえ |
| 3. 日本向け商品の開発 | _____ はい； _____ いいえ |
| 4. 世界市場に向けた商品の開発 | _____ はい； _____ いいえ |
| 5. 日本に関する情報収集 | _____ はい； _____ いいえ |

まずはじめにご回答者及び貴社（外国企業の現地法人あるいは共同出資会社）の「人的資源管理」概況についてお尋ねいたします。貴社の総合職社員の人的資源管理の基本方針やシステムについてお尋ねします。以下の文章が貴社の現状にどの程度当てはまるかを、1-7の数字でお答えください。また、回答はアメリカの本社と日本の現地法人のそれぞれについてご記入下さい。

- 7：まったくそのとおり 6：ほとんどそのとおり 5：どちらかといえばそのとおり
 4：どちらともいえない 3：どちらかといえば違う 2：ほとんど違う
 1：まったく違う X：ここでは全く行われていない。

(B)

総合職社員

採用活動と選抜

社員の採用にあたっては、.

1. 新卒者の採用を最重視する
2. 中途採用を積極的に行う
3. 必要な人材は社外から採用するよりむしろ社内の他の部門に求める
4. 専門能力のテストを行う
5. 性格判断テストを行う
6. 人事部門のスタッフやマネジャーによる面接の結果を重視する
7. 推薦状を重視する
8. 採用は特定の学校の卒業者に限定する

	日本の現地法人 の状況	アメリカ本社 の状況
	全く違う—全くそのとおり	全く違う—全くそのとおり
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7

社員の選抜に際しては、.

9. 特定の専門能力を重視する
10. 創造性を重視する
11. 一般的な習得能力（のみこみのよさ）を重視する
12. 従順性や忠実性を重視する
13. 企業風土への適合能力を重視する
14. 協調性を重視する
15. 勤勉性を重視する

	全く違う—全くそのとおり	全く違う—全くそのとおり
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7

(C)

人事評価

社員の評価にあたっては、.

1. 形式として整った評価体系/システムを活用する
2. 評価は日常の観察など、インフォーマルな情報に基づいて決められる
3. 数量的な業績指標を評価基準として活用する
4. 主観的判断による業績評価を基準とする
5. 業績の自己申告制度を評価基準として活用する
6. 長期的（1年以上）な業績指標を評価基準として活用する
7. 評価の基礎となる業績指標として多くの方法が使われている
8. 目的指向のシステムによる管理が活用されている
9. 業績評価のための標準が活用されている
10. 個性の評価システムが活用されている

	全く違う—全くそのとおり	全く違う—全くそのとおり
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7
	x 1 2 3 4 5 6 7	x 1 2 3 4 5 6 7

総合職社員

	日本の現地法人 の状況							アメリカ本社 の状況								
	全く違う	—	全くそのとおり	全く違う	—	全くそのとおり	全く違う	—	全くそのとおり	全く違う	—	全くそのとおり				
社員に対する評価は、.																
11. ボーナスに大きく反映される	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
12. 社員にフィードバックされ、動機づけのために活用される	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
13. 会社としての期待や目標を社員に浸透させる手段として活用される	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
14. 社員の自己能力の開発に活用される	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7

(D)

社員の業績に対するフィードバック

評価の内容を社員にフィードバックするにあたって、.

	全く違う							全くそのとおり								
1. 個々の社員に対する面接が行われる	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
2. 過程よりもその結果を重視したフィードバックが行われる	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
3. 結果よりもその過程を重視したフィードバックが行われる	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
4. レポートやグラフが活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7

(E)

報酬

報酬システムにおいては、.

	全く違う							全くそのとおり								
1. 個人に対する奨励制度が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
2. グループに対する奨励制度が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
3. 自社株の持株制度が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
4. 形式的に整った職能・職級評価体系が活用される	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
5. 特殊な能力や資格保持者に対する特別手当制度が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
6. 数量的な成果に応じた報奨金制度が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
7. 新しいアイデアや試みに対する報奨金制度が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
8. 仕事の質に応じた報奨金制度が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
9. 自己啓発の成果に対する報奨金制度が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
報酬の決定に際しては、.																
10. 業績に準じて報酬が決める	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
11. 報酬に関する不公平感が社員の間に出ないことを最重視する	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
12. 他社を上回る賃金が設定されるように努力がなされている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
13. 他社を上回る福利・厚生が整備されるように努力がなされている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7

(F)

研修と能力開発

教育研修や能力開発においては、.

	全く違う							全くそのとおり								
1. 社内での集合研修が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
2. 上司による日常的な指導が重視されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
3. 社外での集合研修が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
4. 個人別の能力開発プログラムが活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7

総合職社員

	日本の現地法人 の状況							アメリカ本社 の状況								
	全く違う	全くそのとおり	全く違う	全くそのとおり	全く違う	全くそのとおり	全く違う	全くそのとおり	全く違う	全くそのとおり	全く違う	全くそのとおり				
5. 創造性を養う研修が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
6. 専門技術・専門知識のための研修が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
7. 問題解決のための一般トレーニングが活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
8. 人間関係促進のための研修が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
9. 外国語研修が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
10. 先輩による指導制度が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
11. 新入社員研修が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
12. 海外赴任者への国際研修が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7

(G)

業績改善プログラム

	全く違う							全くそのとおり								
業績改善プログラムとしては、	全く違う	全くそのとおり	全く違う	全くそのとおり	全く違う	全くそのとおり	全く違う	全くそのとおり	全く違う	全くそのとおり	全く違う	全くそのとおり				
1. 個人による提案制度が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
2. 品質管理（QC）チームが活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
3. グループ全体によるTQCが活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
4. チームごとの管理が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7
5. 上記以外の業績改善チーム制度が活用されている	x	1	2	3	4	5	6	7	x	1	2	3	4	5	6	7

(H)

以下の質問も貴社（日本の現地法人）に関するものです。これらについては適当な選択肢をお選びください。

- アメリカ本社を含む全グループの売り上げのうち貴社の売上が占める割合は？ A0-9% B10-19% C20-49% D50-79% E80-100%
 - 日本で販売されるグループの製品のうち日本で製造された製品が占める割合は？ A0-9% B10-19% C20-49% D50-79% E80-100%
 - 管理職（課長以上）の構成比は？ A0-9% B10-19% C20-49% D50-79% E80-100%
 - 現地法人における非日本人マネジャーの構成比は？ A0% B1-4% C5-9% D10-19% E20-33% F33%以上
 - 現在の人事部門の長がその職位に就かれて何年ですか？ A1年未満 B1-2年 C3-5年 D6-9年 E10年以上
 - 平均すると人事部門の長は何年くらいで交替しますか？ A1年未満 B1-2年 C3-5年 D6-9年 E10年以上
- 貴社の社長が現職に就かれる前に、
- アメリカ本社で過ごされた年数は？ A.なし B.2年未満 C.3-5年 D.6-9年 E.10年以上
 - 他の海外現地法人で過ごされた年数は？ A.なし B.2年未満 C.3-5年 D.6-9年 E.10年以上
- 貴社の人事部門の長が現職に就かれる前に、
- アメリカ本社の人事部門で過ごされた年数は？ A.なし B.2年未満 C.3-5年 D.6-9年 E.10年以上
 - アメリカ本社の人事部門以外の部門での年数は？ A.なし B.2年未満 C.3-5年 D.6-9年 E.10年以上
 - 日本以外の海外現地法人で過ごされた年数は？ A.なし B.2年未満 C.3-5年 D.6-9年 E.10年以上
- 貴社の社長が現職に就かれる前に何日くらい海外赴任研修を受けましたか？ A.なし B.1-2日 C.3-6日 D.7-13日 E.14日以上

13. 貴社が在日現地法人として
 創立された時点での従業員数は？ A.1-19人 B.20-49 C.50-99 D.100-299 E.300-499 F.500以上
14. 創立時における役員のうち
 非日本人の占めていた割合は？ A.0-9% B.10-19% C.20-49% D.50-79% E.80-100%
15. 創立時における全従業員のうち
 非日本人の占めていた割合は？ A.0-9% B.10-19% C.20-49% D.50-79% E.80-100%

以下の質問はアメリカ本社に関するものです。これらについては適当な選択肢をお選びください

貴社のアメリカ本社が、.....

16. 創立された年は？ A.1900以前 B.1900-32 C.1933-49 D.1950-73 E.1974-92
17. アメリカ以外で事業を始めたのは？ A.1900以前 B.1900-32 C.1933-49 D.1950-73 E.1974-92
18. 日本で事業を始めたのは？ A.1971以前 B.1971-73 C.1974-79 D.1980-85 E.1986-92
19. 提携ないしは関連している
 日本企業が創立された年は？ A.1900以前 B.1900-32 C.1933-49 D.1950-73 E.1974-92
20. 在日現地法人創立における
 アメリカ本社の持株率は？ A. 0-9% B. 10-19% C. 20-49% D. 50-79% E. 80-100%

(J)

アメリカ本社および日本の現地法人の特性についてお尋ねします。

はじめに貴社のアメリカ本社の特性についてお尋ねします

貴社のアメリカ本社（親会社）においては、.....

- | | | |
|--|---------------|----|
| | いいえ | はい |
| 1. 明確な企業文化や経営スタイルが打ち出されている | 1 2 3 4 5 6 7 | |
| 2. 明確な長期的企業目標が掲げられている | 1 2 3 4 5 6 7 | |
| 3. 明確に製品領域が決められている | 1 2 3 4 5 6 7 | |
| 4. 企業文化が実際の管理システムや行動に反映されている | 1 2 3 4 5 6 7 | |
| 5. 人事部門がアメリカ本社の戦略策定に深く関与している | 1 2 3 4 5 6 7 | |
| 6. グループ全体に関わる戦略を実行するにあたって、人事部門が大きな権限をもっている | 1 2 3 4 5 6 7 | |
| 7. 現地法人はアメリカ本社にとって戦略的に重要である | 1 2 3 4 5 6 7 | |
| 8. 人的資源管理の方針や施策を全世界的に標準化しようとする努力がなされている | 1 2 3 4 5 6 7 | |

貴社のアメリカ本社は、.....

- | | |
|---|---------------|
| 9. 日本の現地法人の経営方針全般について強い影響力をもっている | 1 2 3 4 5 6 7 |
| 10. 日本の現地法人の人的資源管理の方針や施策の決定に強い影響力をもっている | 1 2 3 4 5 6 7 |
| 11. 日本の現地法人の予算全般について強い影響力をもっている | 1 2 3 4 5 6 7 |
| 12. 日本の現地法人の人的資源管理関連の予算について強い影響力をもっている | 1 2 3 4 5 6 7 |
| 13. 一般的にいて海外の現地法人の予算には強い影響力をもっている | 1 2 3 4 5 6 7 |

次に貴社（日本の現地法人）についてお尋ねします

いいえ はい

貴社（日本の現地法人）は、.....

- | | |
|--|---------------|
| 14. 製品デザインのイノベーションを重視している | 1 2 3 4 5 6 7 |
| 15. 生産技術・プロセス技術のイノベーションを重視している | 1 2 3 4 5 6 7 |
| 16. 日常のオペレーション効率の地道な改善を重視している | 1 2 3 4 5 6 7 |
| 17. 小刻みな製品改善を重視している | 1 2 3 4 5 6 7 |
| 18. 将来の競争に関してきわめて不確実な状況に直面している | 1 2 3 4 5 6 7 |
| 19. 日本市場における将来の景気動向に関してきわめて不確実な状況に直面している | 1 2 3 4 5 6 7 |

20. 日本市場における将来の人事・採用の動向

- に関してきわめて不確実な状況に直面している 1 2 3 4 5 6 7
21. アメリカ本社の製品を日本市場に持ち込む際に製品を大きく変更する必要がある 1 2 3 4 5 6 7
22. 他の日本企業の製品とほとんど類似した製品を手掛けている 1 2 3 4 5 6 7
23. 今後5年間に貴社の製品は大きな技術的変革を必要としている 1 2 3 4 5 6 7

(K)情報・コミュニケーションについてお尋ねします。

日本の現地法人の社長および人事部門の長が、次に挙げる情報提供者あるいは国体情報源と公式的・非公式的に接触する頻度はどの程度ですか。次の1-7のうち最も近いものを選び、数字でお答えください。

- 1 : 全く接触なし 2 : 年に1回 3 : 年に2回 4 : 年に4-6回
5 : 月に1回 6 : 毎週 7 : 毎日

	日本の現地法人 の社長	日本の現地法人 の人事部門の長
1. アメリカ本社の役員	1 2 3 4 5 6 7	1 2 3 4 5 6 7
2. アメリカ本社の人事部門担当者	1 2 3 4 5 6 7	1 2 3 4 5 6 7
3. 日本におけるジョイント・ベンチャーのパートナー (もし、パートナーがあれば)	1 2 3 4 5 6 7	1 2 3 4 5 6 7
4. 日本のベンダー/サプライヤー	1 2 3 4 5 6 7	1 2 3 4 5 6 7
5. 他の日本企業の社長	1 2 3 4 5 6 7	1 2 3 4 5 6 7
6. 他の日本企業の人事部門担当者	1 2 3 4 5 6 7	1 2 3 4 5 6 7
7. 他の在日アメリカ企業のアメリカ人社長	1 2 3 4 5 6 7	1 2 3 4 5 6 7
8. 他の在日アメリカ企業の人事部門の長	1 2 3 4 5 6 7	1 2 3 4 5 6 7
9. 日本のコンサルティング会社	1 2 3 4 5 6 7	1 2 3 4 5 6 7
10. 在日のアメリカのコンサルティング会社	1 2 3 4 5 6 7	1 2 3 4 5 6 7
11. 日本におけるアメリカの商工会議所	1 2 3 4 5 6 7	1 2 3 4 5 6 7
12. 日本におけるアメリカの業界団体	1 2 3 4 5 6 7	1 2 3 4 5 6 7
13. 日本以外の国にある現地法人のマネジャー	1 2 3 4 5 6 7	1 2 3 4 5 6 7

(L)

次にあげる人々による貴方の業績に対する評価は、貴方にとってどの程度重要ですか。重要度を1-7の数字でお答えください。

	必要ではない	必要
1. 直接の上司にあたる重役	1 2 3 4 5 6 7	1 2 3 4 5 6 7
2. 直属の部下	1 2 3 4 5 6 7	1 2 3 4 5 6 7
3. 日本の顧客	1 2 3 4 5 6 7	1 2 3 4 5 6 7
4. 社内の同等の地位にあるマネジャー	1 2 3 4 5 6 7	1 2 3 4 5 6 7
5. 他の日本企業の同等の地位にあるマネジャー	1 2 3 4 5 6 7	1 2 3 4 5 6 7
6. 他の多国籍企業の同等の地位にあるマネジャー	1 2 3 4 5 6 7	1 2 3 4 5 6 7
7. 外部の専門家集団	1 2 3 4 5 6 7	1 2 3 4 5 6 7
8. その他: _____	1 2 3 4 5 6 7	1 2 3 4 5 6 7

(M)

貴方の直接の上司は? 職位 _____ ロケーション _____

(N)

以下の質問は、はい・いいえでお答えください。貴社（日本の現地法人）は、.....

1. 社長と人事部門の長は同じ人が担当されていますか？ はい・いいえ
2. 貴社は日本企業とジョイント・ベンチャーを行っていますか？ はい・いいえ
3. 同じグループの中の日本以外の現地法人に製品を輸出している？ はい・いいえ
4. 他の日本企業についての体系的な業績評価を行っている はい・いいえ
5. 在日外資系企業についての体系的な業績評価を行っている はい・いいえ
6. 日本企業の人的資源管理の施策についてのサーベイ（調査）を参考にしている はい・いいえ
7. 在日外資系企業の人的資源管理の施策についてのサーベイ（調査）を参考にしている はい・いいえ
8. 在日外資系企業の人的資源管理の施策についてのサーベイ（調査）に参加したことがある はい・いいえ
9. 日本の経営の仕方を学習させる目的でアメリカ人の
マネジャー（のグループ）を受け入れたことがある はい・いいえ
10. アメリカの製品を変更なしに日本に導入したことがありますか？ はい・いいえ
11. アメリカで製造していない製品を日本で製造していますか？ はい・いいえ

12. 貴社における社長の国籍は？ A. 日本人 B. 非日本人
13. 貴社における人事部門の長の国籍は？ A. 日本人 B. 非日本人
14. 貴社の社員の人数規模を決めるのは A. アメリカの本社 B. 日本の現地法人 C. 一緒に
15. 貴社が主として製品を
販売している市場は？ A. 日本 B. アメリカ C. アジア D. その他

(P)

以下の機能はどの部門が担当していますか。以下のうち該当する項目に○をつけてください。

	貴社	アメリカ (本社)	アジア (現地法人)	その他
1. 販売	_____	_____	_____	_____
2. 流通	_____	_____	_____	_____
3. アフターサービス	_____	_____	_____	_____
4. マーケティング	_____	_____	_____	_____
5. 研究開発	_____	_____	_____	_____
6. 生産/アセンブリー	_____	_____	_____	_____
7. 人的資源管理	_____	_____	_____	_____

(Q) 他の（日本以外の）海外現地法人と比較して、貴方は貴社（日本の現地法人）の業績や成果をどのように評価していますか。次の項目別にお答えください。また明確な目標値がある場合は右の欄に○をつけて下さい。

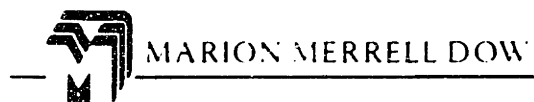
	劣っている	優れている	目標値がある
1. 売上高伸び率	1 2 3 4 5 6 7	_____	_____
2. マーケットシェア	1 2 3 4 5 6 7	_____	_____
3. 営業利益	1 2 3 4 5 6 7	_____	_____
4. 投資収益率（ROI）	1 2 3 4 5 6 7	_____	_____
5. グループ全体の利益に対する貢献	1 2 3 4 5 6 7	_____	_____
6. グループ全体の戦略的決定に対する貢献	1 2 3 4 5 6 7	_____	_____

	劣っている	優れている	目標値がある
7. 市場開発	1 2 3 4 5 6 7		_____
8. コスト削減	1 2 3 4 5 6 7		_____
9. 新製品開発	1 2 3 4 5 6 7		_____
10. 従業員の職務に対する満足度	1 2 3 4 5 6 7		_____
11. 従業員の離職率	1 2 3 4 5 6 7		_____
12. 従業員の欠勤率	1 2 3 4 5 6 7		_____
13. 従業員の能力開発	1 2 3 4 5 6 7		_____

(R) 貴方は次の記述にどの程度賛成されますか。貴方のご意見と合致する程度を1-7 (1:全く反対-7:全く賛成)の数字でお答えください。

	全く反対…全く賛成
1. 日本市場での日本企業との競争はきわめてきびしい	1 2 3 4 5 6 7
2. 日本市場での外資系企業との競争はきわめてきびしい	1 2 3 4 5 6 7
3. 世界市場での日本企業との競争はきわめてきびしい	1 2 3 4 5 6 7
4. 世界市場での外資系企業との競争はきわめてきびしい	1 2 3 4 5 6 7
5. 貴社の人的資源管理は創立以来ほとんど変わっていない	1 2 3 4 5 6 7
6. 貴社の人的資源管理は現在大きな変革期にある	1 2 3 4 5 6 7
7. 在日の外資系企業(貴社以外)の人的資源管理は現在大きな変革期にある	1 2 3 4 5 6 7
8. 一般的な日本企業の人的資源管理は現在大きな変革期にある	1 2 3 4 5 6 7
9. 日本における人的資源管理はアメリカ式の人的資源管理の方向へと変わりつつある	1 2 3 4 5 6 7
10. 日本人従業員の若年層はアメリカ式の人的資源管理を望んでいる	1 2 3 4 5 6 7
11. 貴社のアメリカ本社での人的資源管理は大変に進んでいる	1 2 3 4 5 6 7
12. 一般的な日本企業の人的資源管理は大変に進んでいる	1 2 3 4 5 6 7
13. 日本の外資系企業(貴社以外)の人的資源管理は大変に進んでいる	1 2 3 4 5 6 7
14. 国際的な人的資源管理施策をリードしているのは日本の多国籍企業である	1 2 3 4 5 6 7
15. 国際的な人的資源管理施策をリードしているのはアメリカの多国籍企業である	1 2 3 4 5 6 7
16. 在日外資系企業はすでに日本に確立されている伝統的な人的資源管理を採用すべきである	1 2 3 4 5 6 7
17. 理想的な人的資源管理システムは日本と西洋のそれをミックスしたものである	1 2 3 4 5 6 7
18. 在日外資系企業の人的資源管理は将来的にはミックスしたものになるだろう	1 2 3 4 5 6 7
19. 貴社のアメリカ本社では、人的資源管理は戦略的に重要な機能であるとみなされている	1 2 3 4 5 6 7
20. 貴社においては、人的資源管理は戦略的に重要な機能であるとみなされている	1 2 3 4 5 6 7
21. 貴社においては人事部門の長には人的資源管理畑を歩いてきた人がつくのが普通である	1 2 3 4 5 6 7
22. 貴社においては人事部門の長には様々な部門を経験してきた人がつくのが普通である?	1 2 3 4 5 6 7

ご協力誠にありがとうございました



MARION MERRELL DOW

MARION MERRELL DOW K.K.
Seavans North
2-1, Shibaura 1-chome
Minato-ku Tokyo 105
TEL03(5440)3600 FAX03(5440)3670

I am writing to introduce Patricia Robinson and to request your cooperation in a study she is conducting on personnel practices in American subsidiaries in Japan. Ms. Robinson is a Ph.D. candidate at MIT's Sloan School of Management conducting this research under the auspices of the Fulbright Commission and the Fulbright Hays Foundation with the guidance of Professor Eleanor Westney at M.I.T., Professor Ikujiro Nonaka at Hitotsubashi University, and Professor Stephen Carroll at Maryland University.

This study is part of a larger international study of personnel practices in American and Japanese companies, and is one of the most extensive studies yet conducted in this area. The studies of the U.S. companies has already been completed, and the study of Japanese companies will be initiated soon, allowing firms to benchmark their practices against those of other firms of similar size and orientation. All participating firms will be eligible to receive copies of all research reports from this project. In addition, this study is to be submitted for Ms. Robinson's Ph.D. dissertation to the Massachusetts Institute of Technology.

Ms. Robinson is requesting that the Subsidiary Head or Subsidiary HRM Head fill out the enclosed questionnaire. However, respondents are encouraged to query other personnel at any point. The questionnaire has been carefully designed to take only 25-30 minutes. To minimize the time required by you, she has already collected data on your company's current employee count, foreign equity and number of non-national employees. In addition, virtually the entire questionnaire uses a checklist format which further minimizes the time required to fill it out.

By completing this questionnaire and sending it back in the enclosed envelope your company will; 1) significantly aid a Ph.D. student in completing her degree, 2) contribute to an extensive international study of personnel practices which is being supported by the Society of Human Resource Management in the United States and the Japan - U.S. Educational (Fulbright) Commission among other worthwhile organizations in the U.S. and Japan, and 3) make yourself eligible to receive further research reports on how particular personnel practices are related to firm performance, business strategies, and headquarters subsidiary relationship in firms located in both the U.S. and Japan.

Thank you in advance for your cooperation.

Peter J. Cohen
Director, Human Resources & Associate Communications
Pacific Area, Marion Merrell Dow K.K. and
Chairman, Employment Practices Committee, The American
Chamber of Commerce in Japan

質問票調査へのご協力をお願い

拝啓 時下ますますご清祥のこととお慶び申し上げます。

突然のお手紙で恐縮ではございますが、同封の「在日外資系企業の人的資源管理に関する質問票調査」へのご協力をお願いしたく、ここに調査の概要と調査担当者のバトリシア・ロビンソンをご紹介いたしたく存じます。

バトリシア・ロビンソンは米国マサチューセッツ工科大学スローン経営大学院の博士課程に在籍している研究者で、彼女の研究はフルブライト委員会ならびにフルブライト・ヘイズ基金の支援のもとに、現在一橋大学で行われております。この調査は日米企業の人的資源管理に関する国際比較研究の一貫として行われるものであり、この主の調査としてはもっとも大規模な研究プロジェクトでございます。米国企業の調査はすでに完了しており、今回の調査と合わせて、企業における有効な人的資源管理のあり方を明らかにする研究として、成果が期待されております。この調査はロビンソンの学位論文として取りまとめられるものでございます。

この質問票は在日外資系企業のトップの方、もしくは人的資源管理部門（人事部等）のトップの方にご回答をお願いするものでございます。ご回答には25から30分程度を要しますが、すべての回答は適当な箇所にチェック・マークもしくは数字をご記入いただくもので、簡単にお答えいただけるように質問票は設計されております。

この研究はフルブライト委員会から支援されている国際的研究であり、人的資源管理というマネジメントの重要な側面に光りを当てることによって、日米企業双方に対するより一層の理解を深める意義をもつ研究でございます。当然のこととして、調査にご協力いただいた企業の皆様に対しては、企業の業績や戦略、さらには本社と現地法人との関係などの点で人的資源管理がどのような役割を果たしているかという分析を盛り込んだ調査結果についてのレポートを調査終了後にお渡しいたします。

ご多忙のおりのお願いで誠に恐縮ではございますが、どうか趣旨をご理解の上、ご協力いただけましたら幸いです。末筆ながら、御社の一層のご発展をお祈りしております。

敬具

一橋大学商学部産業経営研究所 教授
野中郁次郎

**AMERICAN MANUFACTURING SUBSIDIARIES IN JAPAN
WITH 100+ EMPLOYEES AND 50%+ FOREIGN INVESTMENT**

Key:

Company Name A% B-C pD

A: Percent foreign Investment

B: Number Employees in Japanese Operations

C: Number Foreign Employees

D: Page in Toyo Guide (Letter indicates that more than 1 Am.
firm on that page)

農林、水産、建設 (Agriculture, Forestry, Fisheries, Construction)

Arbor Acres Japan Co., Ltd. 50% 150-? p 136
T0545-85-2111 F0545-85-2871 TLX3925-496
〒421-33 静岡県庵原郡富士川町北松野字上
日本アーバーエーカー (株)
林建社長

食品 (Food)

Ajinomoto General Foods Inc. 50.0% 1000-? P 137
T03-3358-3000 F03-3356-9865 TLX232-2394
〒160 東京都新宿区本塩町8-2 住友生命四谷
味の素ゼネラルフーズ (株)
松村忠雄社長

Cargil North Asia Ltd. 100.0% 155-8 P 137B
T03-3285-0800 F03-3211-8934 TLX222-2242
〒100 東京都千代田区丸の内3-2-3 富士ビル
(株) カーギル ノースエイジア
E.B. ウィリアムズ社長

Japan Frito-Lay, Ltd. 100.0% 300-? P 139
T03-3360-0351 F03-3368-2766 TLX232-2308
〒169 東京都新宿区北新宿4-8-16 君嶋ビル
ジャパンフリトレー (株)

E. シャーリー社長

Kellogg (Japan) K.K. 100.0% 230-2 p 141
 T03-3344-0811 F03-3344-0841 TLX232-2336
 〒160 東京都新宿区西新宿1-26-2 新宿野村ビル
 日本ケロッグ(株)
 神神明社長

Coca-Cola (Japan) Co., Ltd. 100.0% 659-? p 141B
 T03-3407-6311 F03-3486-1389 TLX242-3431
 〒150 東京都渋谷区渋谷4-6-3
 日本コカコーラ(株)
 D.N. ダフト社長

Heinz Japan Ltd. 100.0% 250-? p 143
 T03-3269-8161 F03-3269-8169 TLX J23620
 〒162 東京都新宿区市谷八幡町13 東京洋服会館ビル
 ハイイツ日本(株)
 小川正平社長

Happy Foods K.K. 88.0% 150-0 P143B
 T0162-23-2140 F0162-24-5128
 〒097 北海道稚内市中央5-6-7
 ハッピーフーズ(株)
 熊谷博社長

Meiji Borden Co., Ltd. 50.0% 125-? p 145
 T03-3404-2391 F03-3404-2393
 〒107 東京都港区南青山2-2-8 DFビル
 明治ボーデン(株)
 福田耕作社長

繊維、衣服(Textile, Clothing)

Du Pont-Toray Co., Ltd. 50.0% 580-? p 146
 T03-3245-5081 F03-3231-1604
 〒103 東京都中央区日本橋本町1-5-6 第10中央ビル

東レ.デュボン(株)
中川芳一社長

紙パルプ、紙製品、 (Pulp, Paper)

IPI Corp. 51.0% 150-? p 147
T03-3592-1961 F03-3581-0014 TLX222-5218
〒100 東京都千代田区永田町2-9-6 十全ビル
アイ.ピー.アイ(株)
田中英司社長

Sanyo Scott Co., Ltd. 50.0% 600-? p 148
T03-3580-2951 F03-3581-4782 TLX222-8196
〒100 東京都千代田区永田町2-14-2 山王グランドビル
山陽スコット(株)
池田禮二社長

Mead-Toppan Co., Ltd. 50.0% 102-? p 149
T03-3274-2961 F03-3274-2624 TLXJ24740
〒104 東京都中央区八重洲2-2-7 トッパン八重洲ビル
ミード トッパン(株)
村井兵部社長

化学(chemicals)

IFF Japan Ltd. 100% 125-3 p150
T03-3402-6421 TLX242-2694
〒150 東京都渋谷区神宮前1-11-11 グリーンファンタジアビル
アイエフエフ日本(株)
丸山佛雄社長

Avon Products Co., Ltd. 60.0% 1751-? p156
T03-3797-8111 F03-3797-8111 TLXJ24995
〒150 東京都渋谷区渋谷2-12-19
エイボン プロダクツ(株)
番馬孝社長

Ecolab K.K. 100.0% 212-2 p 157

T03-3230-4426 F03-3230-1498

〒102 東京都千代田区三番町8-7

エコラボ(株)

宮下昌之社長

Oronite Japan Ltd. 82.0% 140-? p 160

T03-3502-8081 F03-3508-1853

〒105 東京都港区西新橋1-1-15 物産ビルAnnex

オロナイトジャパン(株)

J. R. サンダース社長

KAO-QUAKER Co., Ltd. 50.0% ?-? p 161

T03-3660-7842 F03-3660-7044

〒103 東京都中央区日本橋茅場町1-14-10

花王クエーカー(株)

常盤文克社長

Clinique Laboratories K.K. 100.0% 654-? p 163

T03-3475-1291 F03-3475-1982

〒107 東京都港区南青山1-1-1 新青山ビル西館

クリニークラボラトリーズ(株)

R. H. サイモン社長

Shipley Far East Ltd. 100.0% 134-1 p165

T03-3230-0751 F03-3234-6446 TLX J28875

〒102 東京都千代田区三番町3-8 泉館三番町

シブレイファースト(株)

小谷一葉社長

Japan Gore-Tex Inc. 50.0% 260-? p 166

T03-3327-0011 F03-3327-1231 TLX232-3112

〒156 東京都世田谷区赤堤1-42-5

ジャパンゴアテックス(株)

飯田享社長

Johnson Co., Ltd. 90.0% 570-2 p 167

T0463-72-2111 F0463-71-8477 TLX3882-441
 〒259-01 神奈川県中郡大磯町国府本郷699
 ジョンソン(株)
 本田隆男社長

Johnson & Johnson K.K. 100.0% 437-? p167B
 T03-3438-2911 F03-3438-2958 TLX242-3769
 〒105 東京都港区柴大門1-9-1 SKFビル
 ジョンソン・エンド・ジョンソン(株)
 G.M.ブライス社長

Showa Cabot K.K. 50.0% 217-? p167C
 T03-3431-1721 F03-3434-6910 TLXJ24619
 〒105 東京都港区西新橋3-23-5
 昭和キャボット(株)
 鈴木杏一社長

Du Pont-Showa Denko Co., Ltd. 50.0% 270-0 p168
 T03-3444-5141 F03-3444-5140 TLX242-2761
 〒141 東京都品川区東五反田1-11-15 電波ビル
 昭和電工 デュボン(株)
 木村慶一社長

3M Health Care Ltd. 75.0% 263-? p168B
 T03-3709-8261
 〒158 東京都世田谷区玉川台2-33-1
 スリーエム薬品(株)
 伊藤朝夫社長

Sumitomo 3M Ltd. 50.0% 2343-11 p169
 T03-3709-8111 F03-3709-8751 TLXJ24310
 〒158 東京都世田谷区玉川台2-33-1
 住友スリーエム(株)
 伊藤朝夫社長

Dow Kakoh K.K. 65.0% 250-0 p172
 T03-3502-5411 F03-3503-9645 TLXJ22281
 〒105 東京都港区虎ノ門1-6-12 住友虎ノ門ビル

ダウ化工(株)
澤克也社長

Dow Corning K.K. 100.0% 230-? p 172B
T0465-76-3108 F0465-75-1064
〒258-01 神奈川県足柄上郡山北町岸507-1
ダウ コーニング(株)
宮本一成社長

DIC-Hercules Chemicals Inc. 50.0% 180-? p 173
T03-3253-3165 F03-3253-8026 TLX222-8084
〒101 東京都千代田区外神田2-16-2 第2ディックビル
ディック・ハーキュレス(株)
川井一行社長

Du Pont Japan Ltd. ?% 1050-? p 174
T03-3585-5511
〒105 東京都港区虎ノ門2-10-1 新日鉱ビル・デュポンタワー
デュポン ジャパン リミテッド
M. J. R. アラン社長

Tokyo Organic Chemical Industries, Ltd. 50.0% 194-? p 176
T03-3911-0171 F03-3914-4801
〒114 東京都北区豊島5-2-1
東京有機化学工業(株)
久山宏社長

Tonen Chemical Corp. 50.0% 1500-? p 177
T03-3542-7361 F03-5565-1402 TLX252-3857
〒104 東京都中央区築地4-1-1 東創ビル
東燃化学(株)
藤野芳郎社長
* 92'6月現在、新日鉄化学と合併交渉中

Dow Corning Toray Silicone Co., Ltd. 65.0% 750-1 p 178
T03-3246-1651 F03-3243-1577 TLX222-6530
〒103 東京都中央区日本橋室町2-3-16 三井ビル6号館
東レ・ダウコーニング・シリコン(株)

R. P. クレイサ社長

Nikki-Universal Co., Ltd. 50.0% 210-? p 181
 T03-3212-8151 F03-3287-0280 TLX222-4368
 〒100 東京都千代田区丸の内1-1-3 AIUビル
 日揮ユニバーサル(株)
 山田伸雄社長

Nippon DuBois Co., Ltd. 100.0% 149-2 p 188
 T03-3504-0597 F03-3504-0534 TLX222-6142
 〒105 東京都港区西新橋2-8-12 第2土井ビル
 日本デュボイス(株)
 近藤久義社長

Nippon BEE Chemical Co., Ltd. 50.0% 120-? p 189
 T0720-57-5530 F0720-57-0007
 〒573 大阪府枚方市招提大谷2-14-1
 日本ビーケミカル(株)
 高島成光社長

Japan Butyl Co., Ltd. 50.0% 194-? p 189B
 T044-288-7351 F044-288-7356 TLX3842-260
 〒210 川崎市川崎区浮島町10-3
 日本ブチル(株)
 朝倉龍夫社長

Monsanto Japan Ltd. 100.0% 128-13 p 191
 T03-3287-1251 F03-3287-1250 TLX J22614
 〒100 東京都千代田区丸の内3-1-1 国際ビル
 日本モンサント(株)
 藤原治社長

Nippon Unicar CO., Ltd. 75.0% 520-? p 192
 T03-3270-2241 F03-3270-6725 TLX J22917
 〒100 東京都千代田区大手町2-6-1 朝日東海ビル
 日本ユニカー(株)
 松本三郎社長

Lubrizol Japan Limited 100.0% 154-? p 192B

T03-3504-1345 F03-3504-1340 TLX J26814

〒105 東京都港区虎ノ門1-23-7

日本ルーブリゾール(株)

島田昌彦社長

Loctite (Japan) Corp. 100.0% 141-? p 192C

T045-784-1601 F045-784-0200 TLX3824-144

〒236 横浜市金沢区福浦1-15-13

日本ロックタイト(株)

町井昭之社長

Procter & Gamble Far East Inc. -% 1834-? p 195

T06-201-1581 F06-223-1826

〒541 大阪府中央区高麗橋4-2-16

プロクター・アンド・ギャンブル・ファー・イースター・インク・在日支店

R. G. ビアス社長

Fuji Davison Chemical Co., Ltd. 50.0% 256-2 p 196

T0568-51-2511 F0568-51-8547 TLX J59774

〒487 愛知県春日井市高蔵寺町2-1846

富士デヴィソン化学(株)

高橋誠治社長

Helene Curtis Japn INC. 100.0% 274-0 p 197

T03-3343-1761 F03-3343-1770 TLX J25732

〒160 東京都新宿区西新宿2-7-1 新宿第一生命ビル

ヘレンカーチスジャパン(株)

矢野博也代表取締役

Max Factor K. K. 100.0% 438-? p 199

T03-3492-9811 F03-3492-9868

〒141 東京都品川区西五反田2-12-3

マックスファクター(株)

野坂和男社長

Mitsui-Cyanamid Ltd. 50.0% 104-0 p 200

T03-3581-2621 F03-3581-2424 TLX222-6952
 〒105 東京都港区虎ノ門2-3-13 第18森ビル2階
 三井サイアナミッド(株)
 阿久根顕一社長

Du Pont-Mitsui Fluorochemicals Co., Ltd. 50.0% 400-2 p200B
 T03-3214-5241 F03-3215-0064 TLX222-2169
 〒100 東京都千代田区大手町1-2-3 三井生命ビル
 三井・デュボンフロロケミカル(株)
 T. F. ジョルダン社長

Du Pont-Mitsui Polychemicals Co., Ltd. 50.0% 350-? p200C
 T03-3580-5531 F03-3592-1540 TLX222-2185
 〒100 東京都千代田区霞が関3-2-5 霞が関ビル
 三井・デュボン ポリケミカル(株)
 今道明社長

Monsant Kasei Co. 50.0% 106-0 p203
 T03-3283-4410 F03-3283-4480
 〒100 東京都千代田区丸の内2-5-2 三菱ビル
 モンサント化成(株)
 柴田松次郎社長

Union Carbide Srevice K.K. 100.0% 124-? p204
 T045-474-3032 F045-474-3027
 〒222 横浜市港北区新横浜3-18-9 新横浜Cビル
 ユニオン・カーバイド・サービス(株)
 R. L. プロメシク社長

Revlon K.K. 100.0% 850-? p206
 T03-3475-9111 F03-3475-9006 TLXJ28682
 〒106 東京都港区六本木6-9-12
 レブロン(株)
 守屋英明社長

医薬品 (medicine)

Upjohn Pharmaceuticals Ltd. 100.0% 255-8 p 208

T03-3349-0211 F03-3349-0230

〒160 東京都新宿区西新宿6-14-1 新宿グリーンタワービル17階

アップジョン ファーマシューティカルズ リミテッド(株)

小林利彦社長

Searle Yakuhin K.K. 70.0% 392-2 p 209

T06-543-5511 F06-541-1362 TLX J63641

〒550 大阪市西区北堀江3-12-23 三木産業ビル

サール薬品(株)

名越(由朕)社長

Schering-Plough K.K. 100.0% 758-5 p 210

T06-201-1701 F06-201-1791 TLX J63578

〒541 大阪府中央区淡路町1-2-6 阪本ビル

シェリング・プラウ(株)

A.H. ワイルド社長

Dainabot Co., Ltd. 70.0% 910-5 p 211

T03-3437-9441 F03-3437-9367 TLX J26369

〒105 東京都港区虎ノ門3-8-21

ダイナボット(株)

J.B. ジョンストン 代表取締役

Eli Lilly Japan K.K. m100.0% 390-6 p 212

T078-242-9013 F078-242-9099 TLX J78855

〒651 神戸市中央区御幸通4-2-20 三宮中央ビル

日本イーライリリー(株)

M.E. ハンソン社長

Japan Elanco Co., Ltd. 50.0% 230-? p 212B

T06-363-2861 TLX 522-2672

〒530 大阪市北区西天満6-1-2 千代田ビル別館内

日本エランコ(株)

吉利一雄社長

Lederle (Japan), Ltd. 50.0% 1545-? p 215

T03-3561-8781 F03-3561-0370 TLX 252-2556

〒104 東京都中央区京橋1-10-3

日本レダリー(株)

久永勝一郎社長

Wyeth (Japan) Corp. 100.0% 380-0 p 216

T03-5485-6043 F03-5485-6050 TLX J28477

〒106 東京都港区西麻布4-15-21 第6興和ビル

日本ワイス(株)

関亨社長

Baxter Ltd. 100.0% 1020-7 p 217

T03-3237-6611 F03-3237-6617 TLX 232-3260

〒102 東京都千代田区六番町4 英全ビル

バクスター(株)

M. S. エステス社長

Pfizer Pharmaceuticals Inc. 100.0% 2383-2 p 217B

T03-3344-4411 F03-3348-4020 TLX 232-4106

〒163 東京都新宿区西新宿2-1-1 新宿三井ビル

ファイザー製薬(株)

谷口準社長

Bristol-Myers Squibb K.K. 100.0% 1087-10 p 218

T03-3403-3058 F03-3403-5481 TLX J25986

〒107 東京都港区赤坂7-1-16 日本生命赤坂第2ビル

ブリストル・マイヤーズ スクイブ(株)

M. P. シブルスキー社長

Procter & Gamble Health Care K.K. 100.0% 116-? p 218B

T06-201-1581 F06-232-0869

〒541 大阪市中央区高麗橋4-2-16 朝日生命館

プロクター・アンド・ギャンブル・ヘルスケア(株)

L. ヤンマート社長

Marion Merrell Dow K.K. 100.0% 110-4 p 220

T03-5440-3616 F03-5440-3670 TLX J22281

〒105 東京都港区芝浦1-2-1 シーバンスN館

マリオン・メレル・ダウ(株)

M. V. エイロット社長

Merrell Dow Funai K.K. 97.3% 600-? p221

T06-941-0111 F06-946-2754

〒540 大阪市中央区釣鐘町2-4-1

メレル.ダウ.フナイ(株)

M. V. エイロット社長

Janssen-Kyowa Co., Ltd. 60.0% 261-1 p221B

T03-3445-2211 F03-3445-2216 TLX J27539

〒141 東京都品川区東五反田3-1-5 高輪台第一生命ビル

ヤンセン協和(株)

栗原弘治社長

RHONE-POULENIC RORER JAPAN, INC. 90.2% 326-1 p222

T03-3453-6111 F03-3453-6110 TLX222-3924

〒104 東京都中央区勝どき3-12-1

ローヌ.プーラン ローラー(株)

清水重亮社長

Warner-Lambert K.K. 100.0% 470-0 p222B

T03-3447-5311 F03-3447-5349

〒108 東京都港区白金台3-19-1 第31興和ビル

ワーナー.ランバード(株)

M.A. レンショウ社長

石油 石炭製品(Petroleum, Coal)

Kyokuto Petroleum Industries, Ltd. 50.0% 332-? p223

T03-3270-0841 F03-3246-2166 TLX222-4742

〒100 東京都千代田区大手町1-7-2 サンケイビル新館

極東石油工業(株)

橋本久彌社長

Koa Oil Co., Ltd. 50.0% 1090-? p223B

T03-3241-8611 F03-3245-0898 TLX222-3415

〒100 東京都千代田区大手町2-6-2 日本ビル

興亞石油（株）
野口照雄社長

Tonen Corp. 50.0% 2279-? P225
T03-3286-5115 F03-3286-5120 TLX222-7055
〒100 東京都千代田区一ツ橋1-1-1 バレスサイドビル
東燃（株）
中原伸之社長

Nippon Petroleum Refining Co., Ltd. 50.0% 1940-? P226
T03-3502-1111 F03-3504-1885 TLX J27237
〒105 東京都港区西新橋1-3-12 日石本館
日本石油精製（株）
山本二郎社長

プラスチック(Plastics)

GE Plastics Japan Ltd. 51.0% 548-4 P227
T03-5695-4888 F03-5695-4857 TLX252-3333
〒103 東京都中央区日本橋本町3-7-2 シオノギ本町共同ビル
日本ジーイープラスチック
J. M. S. ブラウン社長

Japan Tupperware Co., Ltd. 100.% 510-? p228
T03-5485-6333 F03-5485-6465
〒106 東京都港区西麻布2-24-11 麻布ウエストビル
日本タッパーウェア（株）
L. ハウゲン社長

Hitachi-Borden Chemical Products, Inc. 50.0% 170-? p229
T03-3222-0720 F0296-28-5732
〒101 東京都千代田区西神田3-1-6 日本弘道会ビル
日立ボーデン（株）
橋谷公平社長

ゴム、皮革 (Rubber, Leather)

Nippon Giant Tire Co., Ltd. 50.0% 265-? p230
 T06-443-7403 F06-447-7875 TLX524-5479
 〒550 大阪市西区江戸堀1-17-18
 日本ジャイアントタイヤ(株)
 福島令二郎社長

Unitta Co., Ltd. 51.0% 360-? p231
 T06-266-1771 F06-266-1778 TLX522-9166
 〒541 大阪市中央区本町1-8-12 日本生命堺筋本町ビル
 ユニッタ(株)
 有長国臣社長

ガラス. 窯業 (Glass. & ??)

Corning Japan K.K. 100.0% 170-? p234
 T03-3586-1051 F03-3582-5150 TLXJ22165
 〒107 東京都港区赤坂1-14-14 第35興和ビル3階
 コーニング ジャパン (株)
 C. P. W. ブース社長

Sasaki-Owens Glass Co., Ltd. 50.0% 102-? p234B
 T03-3663-1225 F03-3663-1229 TLX252-2773
 〒103 東京都中央区日本橋馬喰町2-2-6
 佐々木オーエンス硝子(株)
 佐々木宗和社長

非鉄金属(nonferrous metals)

Toyo Ekco Co., Ltd. 50.0% 106-0 p239
 T06-251-0161 F06-245-0367 TLXJ63307
 〒541 大阪市中央区北久宝寺町3-3-8 住生下島ビル
 東洋エコー(株)
 兼廣節雄社長

Eutectic of Japan, Ltd. 100.0% 140-0 p241

T044-599-3101 F044-599-3108 TLX384-2735
 〒211 川崎市幸区小倉1224
 日本ユテク(株)
 辻田孝社長

金属製品(metalworking)

Shibazaki Seisakusho Ltd. 50.5% 215-? p244
 T0473-79-2345 TLX2993-121
 〒272 千葉県市川市田尻1-3-1
 (株)柴崎製作所
 柴崎康夫社長

Spraying Systems Co., Japan 100.0% 120-? p244B
 T03-3445-6031 F03-3444-5688 TLX242-4703
 〒141 東京都品川区東五反田5-10-18 第一岩田ビル
 スプレーイングシステムスジャパン
 山田三喜夫社長

Nippon Pop Rivets & Fasteners, Ltd. 96.2% 194-? p249
 T03-3265-7291 F03-3265-7298 TLX232-3171
 〒102 東京都千代田区麹町4-5 KSビル
 ポップリベットファスナー(株)
 藤崎徹社長

機械(machine)

Ikegai-Goss Co., Ltd. 100.0% 220-0 p252
 T03-3503-3901 F03-3508-8046 TLXJ2418
 〒105 東京都港区虎ノ門1-22-14 ミツヤ虎ノ門ビル
 池貝ゴス(株)
 渡辺良雄社長

Walbro Far East, Inc. 100.0% 230-0 p252B
 T044-433-1551 F044-433-2250
 〒221 川崎市中原区新丸子東2-925

(株)ウオルブロー.ファーイースト
磯 正美社長

Koyo Lindberg Ltd. 50.0% 304-? p258
T07436-4-0981 F07436-4-0989 TLX5522-351
〒632 奈良県天理市嘉幡町229
光洋リンドバーグ(株)
岸将朋社長

Shin Caterpillar Mitsubisi Ltd. 50.0% 6215-40 p260
T03-3478-3711 F03-3478-4183
〒107 東京都港区北青山1-2-3 青山ビル
新キャタピラー三菱(株)
小西秋雄社長

Speedfam Co., Ltd. 50.0% 130-? p261
T0467-76-3131 F0467-77-7159 TLX3862-463
〒252 神奈川県綾瀬市早川2647
スピードファム(株)
小原博社長

Sumitomo Eaton Hydraulics Co., Ltd. 50.0% 182-0 p261B
T03-3258-4651 F03-3258-4659 TLX222-3382
〒101 東京都千代田区鍛冶町1-8-5 新神田ビル
住友イートン機器(株)
牧野利雅社長

Tokyo Ryuki Seizo Co., Ltd. 100.0% 140-? p265
T045-933-6311 F045-933-3591 TLX382-3788
〒226 横浜市緑区川和町50-1
東京流機製造(株)
後藤真次社長

Toyo Carrier Engineering Co., Ltd. 99.9% 390-0 p265B
T03-3270-9411 F03-3270-9425 TLX222-2980
〒103 東京都中央区日本橋本石町4-4-20 三井第2別館
東洋キャリア工業
上野輝夫社長

Niigata Masoneilan Co., Ltd. 50.0% 358-? p266
 T03-3502-5181 F03-3508-8171 TLX222-6686
 〒105 東京都港区虎ノ門2-3-13 第18森ビル
 ニイガタ・メーソンネーラン(株)
 戸田隆祥社長

Niigata Worthington Co., Ltd. 50.0% 228-? p266B
 T03-3732-6221 F03-3732-5183 TLX222-4740
 〒144 東京都大田区蒲田本町1-9-3 新潟鉄工所ECビル
 新潟ウォシントン(株)
 捨田利貢社長

Asco (Japan) Co., Ltd. 100.0% 120-? p268
 T0798-65-6361 F0798-67-2486 TLX5644-314
 〒663 兵庫県西宮市高畑町89-1
 日本アスコ(株)
 早勢直社長

Woodward Governor (Japan), Ltd. 100.0% 114-? p268B
 T0476-93-4661 F0476-93-7939 TLX3762-164
 〒286-02 千葉県印旛郡富里町中沢251-1
 日本ウッドワードガバナー(株)
 C. D. バース社長

Nippon Otis Elevator Co. 51.0% 2200-? p271
 T03-3349-1351 F03-3349-1369 TLXJ28630
 〒163 東京都新宿区西新宿2-4-1 新宿NSビル
 日本オーチスエレベータ(株)
 小本允社長

Dover Japan Inc. 50.1% 131-? p272
 T03-3230-2211 F03-3230-2210 TLX232-4593
 〒102 東京都千代田区紀尾井町3-27
 日本ドーバー(株)
 米原令敏社長

Nippon Donaldson Ltd. 100.0% 280-0 p273

T0428-31-4111 F0428-31-9074 TLX2852-082
 〒198 東京都青梅市今寺5-13-2
 日本ドナルドソン(株)
 唐澤 光義 代表取締役

Nippon Fisner Co., Ltd. 71.0% 203-0 p273B
 T03-3552-5751 F03-3555-0735 TLX252-3735
 〒104 東京都中央区八丁堀2-23-1 エンバイヤビル
 日本フイツシヤ(株)
 平山貞宏社長

Nihon Pall Ltd. 100.0% 330-? p274
 T03-3437-6561 F03-3437-1485 TLX222-3706
 〒105 東京都港区芝公園2-4-1 秀和芝パークビルA館
 日本ボール(株)
 佐竹章夫社長

Yokogawa Johnson Controls Corp. 50.0% 620-? p281
 T03-3230-7104 F03-3230-7334
 〒102 東京都千代田区九段北3-3-9 新一口坂ビル
 横河ジョンソンコントロールズ(株)
 登山昌昭社長

Ransburg-Gema K.K. 66.5% 186-? p282
 T03-3732-5211 F03-3736-2135 TLX246-8718
 〒144 東京都大田区東六郷3-5-3
 ランズバーグ・ゲマ(株)
 生島和幸社長

電気機器(electric applicants)

ITT Canon, Ltd. 100.0% 160-2 p283
 T045-402-5800 F045-402-5235
 〒222 横浜市港北区篠原町3014-2
 (株)ITT キヤノン
 島中 彬 社長

Analog Devices K.K. 100.0% 200-? p284
 T03-3263-6826 F03-3263-6617 TLXJ28440
 〒102 東京都千代田区麹町4-7-8
 アナログ・デバイス(株)
 今井幸蔵社長

Applied Materials Japan Inc. 100.0% 700-35 p284B
 T03-3348-3881 F03-3348-3885 TLXJ25886
 〒163 東京都新宿区西新宿2-7-1 第一生命ビル
 アプライド マテリアルズ ジャパン (株)
 MR. DAVID ORGILL

岩崎哲夫社長

LSI Logic K.K. 57.0% 155-? p286
 T03-3589-2711 F03-3589-2740
 〒107 東京都港区赤坂6-1-20 国際新赤坂ビル西館13階
 エルエスアイロジック(株)
 八幡恵介社長

Kondo Sylvania Ltd. 70.0% 226-? p289
 T03-3427-4011 F03-3427-5502
 〒156 東京都世田谷区経堂1-38-12
 近藤シルバニア(株)
 佐藤宗司社長

Schlumberger K.K. 100.0% 270-15 p290
 T0427-59-2111 F0427-59-4270 TLXJ34492
 〒229 神奈川県相模原市淵野辺2-2-1
 シュルンベルジェ(株)
 R. v. ビューレン社長

Tel-Varian Ltd. 50.0% 212-2 p293
 T0551-22-7041 F0551-22-7003 TLX3386270
 〒407 山梨県韮崎市藤井町北下条2381-1
 テルバリアン(株)
 井上彪社長

Display Technologies Inc. 50.0% 350-0 p293B
 T0792-72-1211 F0792-72-1346
 〒671-12 兵庫県姫路市余部区上余部50
 ディスプレイテクノロジー(株)
 小倉浩一社長

Tohoku Semiconductor Corp.(Tohoku Semiconductors) 50.0% 641-1 p294
 T022-378-8000 F022-378-8588
 〒981-31 仙台市泉区明通3-3-1
 東北セミコンダクタ(株)
 梶山秀矩社長

National Semiconductor Japan Ltd. 100.0% 300-? p294B
 T03-3299-7001 F03-3299-7000
 〒160 東京都新宿区西新宿4-15 三省堂新宿ビル5階
 ナショナルセミコンダクター・ジャパン(株)
 W. G. ソトソン社長

IBM Japan, Ltd. 100.0% 24677-? p295
 T03-3586-1111
 〒106 東京都港区六本木3-2-12
 日本IBM(株)
 椎名武雄社長

Nippon Interconnect Co. 50.0% 102-? p295B
 T03-3263-5611 F03-3239-5132
 〒102 東京都千代田区九段南2-3-27 あや九段ビル
 日本インターコネクト(株)
 濱田博 代表取締役

NCR Japan, Ltd. 70.0% 4187-? p296
 T03-3582-6111 F03-3582-1391 TLXJ24891
 〒107 東京都港区赤坂1-2-2
 日本エヌシーアール(株)
 秋山育雄社長

AMP (Japan), Ltd. 100.0% 1250-? p296B
 T044-844-8111 F044-812-3207 TLX242-2977

〒213 川崎市高津区久本87

日本エー.エム.ピー(株)

小松敬之社長

Emerson Japan Ltd. 100.0% 350-? p297

T03-3545-3251 F03-3545-4372 TLXJ23272

〒104 東京都中央区銀座2-16-7 電通恒産第3ビル

日本エマソン(株)

西潟真澄社長

Nihon Sun Microsystems K.K. 100.0% 431-? p297B

T03-3221-7021 F03-3221-1484

〒102 東京都千代田区二番町11-19

日本サン.マイクロシステムズ(株)

天羽浩平社長

Nihon Semiconductor Inc. 55.0% 381-0 p297C

T0298-64-3350 F0298-64-3458

〒300-32 茨城県つくば市北原10

日本セミコンダクター(株)

竹内宏光社長

Thomas & Betts Japan, Ltd. 100.0% 160-? p298

T03-3791-5411 F03-3791-6376 TLX242-4244

〒153 東京都目黒区東山1-2-7 第44興和ビル

日本ティ.アンド.ピー(株)

佐藤元福社長

Digital Equipment Corp. Japan 100.0% 3611-10 p298B

T03-3989-7111 F03-3981-8230 TLXJ26428

〒170 東京都豊島区東池袋3-1-1 サンシャイン60

日本デジタル.イクイップメント(株)

E.J. ライリー.Jr. 代表取締役

Data Card Japan Ltd. 75.5% 140-? p298C

T03-3436-5411 F03-3459-6366 TLX2425494

〒105 東京都港区西新橋2-39-3 SVAXビル

日本データカード(株)

藤田晋吾社長

Texas Instruments Japan Ltd. 100.0% 5000-? p299

T03-3498-2111 F03-3400-9504 TLXJ24360

〒107 東京都港区北青山3-6-12 青山富士ビル

日本テキサス・インスツルメンツ(株)

長江幸昭社長

Burr-Brown Japan Co., Ltd. 100.0% 130-? p299B

T03-3586-8141 F03-3582-2940

〒107 東京都港区赤坂7-10-20 アカサカセブンアヴェニュービル

日本パー・ブラウン(株)

石橋繁宏社長

Burndy Japan Ltd. 50.0% 580-? p300

T03-3443-7211 F03-3440-5060 TLX242-5124

〒108 東京都港区高輪3-26-33 秀和品川ビル

日本バーンディ(株)

土方章光社長

Bailey Japan Co., Ltd. 50.0% 405-? p301

T0559-49-3311 F0559-49-1114 TLXJ26588

〒410-21 静岡県田方郡菰山町原木511

日本ベーレー(株)

平田保光社長

Nippon Motorola Ltd. 100.0% 2550-? p302

T03-3440-3311 F03-3440-0338 TLXJ22449

〒106 東京都港区南麻布3-20-1

日本モトローラ(株)

R. ヤンツ社長

Nihon Prime Computer Inc. 70.0% 300-2 p303

T03-3346-6111 F03-3346-2094 TLXJ29311

〒163 東京都新宿区西新宿2-7-1 新宿第一生命ビル

日本プライム・コンピュータ(株)

小川 義水 社長

Molex Japan Co., Ltd. 100.0% 1100-? p303B
 T0462-61-4500 F0462-64-1470
 〒242 神奈川県大和市深見東1-5-4
 日本モレックス(株)
 徳山悟郎社長

Fuji Xerox Co., Ltd. 50.0% 13795-? p306
 T03-3585-3211 TLX242-3635
 〒107 東京都港区赤坂3-3-5
 富士ゼロックス(株)
 小林陽太郎社長

Yokogawa-Hewlett-Packard, Ltd. 75.0% 3700-? p308
 T03-3331-6111 F03-3335-1401 TLX232-2024
 〒168 東京都杉並区高井戸東3-29-21
 横河ヒューレット・パカード(株)
 笹岡健三社長

Yokogawa Medical Systems, Ltd. 75.0% 1273-? p308B
 T0425-85-5111 F0425-85-5475 TLX2842-413
 〒191 東京都日野市旭が丘4-7-127
 横河メディカルシステム(株)
 C. P. バイパー社長

自動車 (automobiles)

NSK Warner K.K. 50.0% 800-? p310
 T0466-44-6311 F0466-45-5808 TLX222-8323
 〒252 神奈川県藤沢市桐原町12
 エヌエスケー・ワーナー(株)
 細川禮二郎社長

Garrett Turbo Inc. 100.0% 141-4 p311
 T03-3979-1141 F03-3979-1145 TLX272-3453
 〒367-02 埼玉県児玉郡児玉町大字共栄字南共和350-17
 (株)ギャレットターボ
 J. W. アーノルド社長

TRW Steering & Industrial Products (Japan) Co., Ltd. 100.0% 720-? p311B

T0568-31-8111 F0568-31-8347 TLX4485-071

〒486 愛知県春日井市牛山町字下田面中1203

ティーアールダブリュ エス アイ (株)

松浦秀明社長

Borg-Waner Automotive K.K. 100.0% 190-0 p313

T05956-4-4111 F05956-4-1309

〒518-04 三重県名張市八幡1300-50

ボーク・ワーナー・オートモーティブ(株)

原田誠文社長

その他の輸送機

Sumitomo Yale Co., Ltd. 50.0% 540-? p314

T0562-48-5251 F0562-48-5256 TLX4486-580

〒474 愛知県大府市大府町北江59-1

住友エール(株)

渡辺純夫社長

Nippon Fruehauf Co., Ltd. 50.8% 650-? p314B

T0462-85-3111 F0462-86-3340 TLX3872-448

〒243 神奈川県厚木市上依知上ノ原3034

日本フルハーフ(株)

酒井直之社長

精密機器(precision machine)

Johnson & Johnson Medical K.K. 100.0% 294-2 p316

T03-3239-5011 F03-3221-9878 TLX232-4892

〒102 東京都千代田区一番町15-5 一番町NNビル

ジョンソン・エンド・ジョンソン メディカル (株)

廣瀬光雄社長

General Signal Japan Corp. 81.0% 100-1 p317

T0484-41-1131 F0484-45-1678 TLX2962-805
 〒335 埼玉県戸田市上戸田4-17-13
 ゼネラル シグナル ジャパン (株)
 内田傳之助社長

Sony / Tektronix Corp. 50.0% 950-3 p317B
 T03-3448-4611 F03-3444-0318 TLX242-2850
 〒141 東京都品川区北品川5-9-31
 ソニー・テクトロニクス(株)
 熊倉尚社長

Nippon Bio-Rad Laboratories K.K. 100.0% 135-? p320
 T03-3534-8571 F03-3534-8027
 〒104 東京都中央区勝どき5-3-6 住友生命勝どきビル
 日本バイオ・ラッド ラボラトリーズ (株)
 N・シュワーツ 社長

Nippon Becton Dickinson Co., Ltd. 100.0% 300-6 p320B
 T03-3403-9991 F03-3403-5321 TLXJ28354
 〒107 東京都港区赤坂8-5-34 島藤ビル
 日本ベクトン・ディッキンソン(株)
 G. C. リンチ社長

Nippon Polaroid K.K. 100.0% 175-? p321
 T03-3438-8811 F03-3433-3537 TLXJ24431
 〒105 東京都港区虎ノ門3-2-2 第30森ビル
 日本ポラロイド(株)
 升田忠昭社長

Nihon Millipore Ltd. 100.0% 340-? p321B
 T03-3474-9111 F03-3474-9130 TLXJ24948
 〒140 東京都品川区北品川1-3-12 第5小池ビル
 日本ミリポア・リミテッド
 高橋日出生社長

Moog Japan Ltd. 90.0% 122-? p321C
 T0463-55-3615 F0463-54-4709 TLX3882-436
 〒254 神奈川県平塚市真土1532

日本ムーグ（株）
S・A・ハックヴェル社長

Beckman Instruments, Inc. 100.0% 203-2 p322
T03-3221-5911 F03-3221-5888 TLXJ23479
〒102 東京都千代田区三番町6
ベックマン（株）
西本泰治社長

その他製造

Asahi Komag Co., Ltd. 50.0% 250-? p324
T03-3218-5633 F03-3201-2359
〒100 東京都千代田区丸の内2-1-2 旭硝子（株）内
旭コマグ（株）
石垣豊彦社長

Avery-Toppan Co., Ltd. 50.0% 200-? p325
T03-3454-1091 F03-3454-1266 TLXJ29266
〒108 東京都港区芝浦3-19-25
エイプリイ・トッパン（株）
村上順一社長

Kasei Verbatim Corp. 50.0% 230-0 p326
T0465-37-3615 F0465-36-9219
〒250 神奈川県小田原市成田1060
化成パーペイタム（株）
松沢寿俊社長

Nippon Sherwood Medical Industries Ltd. 50.0% 222-0 p330
T03-3355-9411 F03-3357-4624 TLX232-4369
〒151 東京都渋谷区千駄ヶ谷5-27-7 日本ブラウンズウイックビル
日本シャーウッド（株）
尾川政也社長

Steelcase Japan Ltd. 50.0% 210-2 p331
T0720-28-3881 F0720-38-2764

〒572 大阪府寝屋川市石津中町25-8
 日本スチールケース(株)
 尾形卓也社長

Warner-Pioneer Corp. 100.0% 274-? p334

T03-3475-2111 F03-3479-1138

〒107 東京都港区南青山1-1-1 新青山ビル東館
 ワーナー・バイオニア(株)
 山本徳源社長

繊維卸売 (the Wholesale of Textile)

Levi Strauss Japan K.K. 83.6% 164-? p362

T03-3478-7511 F03-3478-1778

〒107 東京都港区南青山3-1-30 住友生命青山ビル
 リーバイ・ストラウス ジャパン(株)
 D.E. シュミット社長

化学卸売

Exxon Chemical Japan Ltd. 100.0% 140-? p366

T03-3584-6211 F03-3586-6658 TLXJ22846

〒107 東京都港区赤坂5-3-3 TBS会館ビル
 エクソン化学(株)
 R. D. ワットリング社長

Estee Lauder K.K. 100.0% 750-? p366B

T03-3405-7195 F03-3423-3545 TLXJ26802

〒107 東京都港区南青山1-1-1 新青山ビル西館17階
 エスティ ローダー (株)
 R. H. サイモン社長

Ortho Diagnostic Systems K.K. 100.0% 166-2 p367

T03-3438-2944 F03-3438-1252 TLXJ32504

〒105 東京都港区芝公園3-1-38 秀和芝公園3丁目ビル
 オーソ・ダイアグノスティック・システムズ(株)

O.N. デイビス社長

Dow Chemical Japan Ltd. 100.0% 400-? p373

T03-3503-3361 F03-3580-7034 TLXJ22281

〒100 東京都千代田区内幸町2-1-4 日比谷中日ビル

ダウ・ケミカル日本(株)

J.W.ハリス社長

Japan Upjohn Ltd. 55.0% 780-2 p377

T03-3347-8600 F03-3348-8930

〒163 東京都新宿区西新宿2-6-1 新宿住友ビル

日本アップジョン(株)

A.A.バトラー社長

Amway (Japan) Ltd. 99.3% 345-4 p378

T03-3769-5741 F03-3779-6696 TLX7812-8267

〒106 東京都港区南麻布2-8-12 日本生命南麻布ビル

日本アムウェイ(株)

W.A.ヘマー社長

燃料卸売

Esso Sekiyu K.K. 100.0% 1219-9 p392

T03-5561-1070 F03-3584-0388 TLXJ22846

〒107 東京都港区赤坂5-3-3 TBS会館ビル

エッソ石油(株)

L.K.ストロール社長

Mobil Sekiyu K.K. 100.0% 1272-10 p394

T03-3244-4691 F03-3244-4528 TLXJ22394

〒100 東京都千代田区大手町1-7-2 サンケイビル新館

モービル石油(株)

杉原泰馬社長

機械卸売

Getz Bros. Co., Ltd. 82.7% 202-? p409
 T03-3423-6451 F03-3402-5979 TLX22382
 〒107 東京都港区南青山3-1-30 住友生命南青山ビル
 (株) ゲッツ ブラザーズ
 R. シムキンズ社長

Kodak Information Systems, K.K. 100.0% 240-? p410
 T03-5488-2420 F03-5488-4527
 〒140 東京都品川区北品川4-7-35 御殿山森ビル
 コダック・情報・システムズ(株)
 木村勳社長

AM Japan Co., Ltd. 67.2% 108-? p418
 T03-3230-4611
 〒102 東京都千代田区麹町5-3
 日本エーエム(株)
 保谷要社長

Gray Co. of Japan, Ltd. 100.0% 111-2 p420
 T03-3413-2101 F03-3413-2150 TLXJ26317
 〒154 東京都世田谷区太子堂2-6-4
 日本グレイ(株)
 L.E. マクタガード社長

Medtronic Japan Co., Ltd. 100.0% 131-0 p424
 T03-3230-2701 F03-3230-2195 TLXJ23920
 〒102 東京都千代田区紀尾井町3-6 秀和紀尾井町パークビル
 日本メドトロニック(株)
 A.L. ゼッカ代表取締役

Nordson K.K. 100.0% 172-0 p425
 T03-3450-8818 F03-3472-3301 TLX242-4538
 〒140 東京都品川区東品川3-32-36
 ノードソン(株)
 宮原義彦社長

Hokkai Ford Tractor Co., Ltd. 50.0% 560-? p431
 T011-621-8181 F011-644-6173 TLX933-572

〒063 札幌市西区琴似三条7-661
 北海フォードトラクター(株)
 芝本尚武社長

電気卸売

Apple Computer Japan, Inc. 100.0% 160-? p435

T03-5562-6000 F03-5562-6060

〒106 東京都港区六本木1-4-30 第25森ビル23階
 アップル・コンピュータ・ジャパン(株)
 武内重親社長

Intel Japan K.K. 100.0% 400-? p436

T0298-47-8511 F0298-47-8819

〒300-26 茨城県つくば市東光台5-6
 インテルジャパン(株)
 W.O.ハウ社長

A-B Nippondenso Co., Ltd. 50.0% 120-3 p436B

T03-3562-6571 F03-3562-6594 TLX272-2695

〒104 東京都中央区京橋3-13-1 東京有楽ビル
 A-B デンソー(株)
 熊沢義美社長

Teradyne 100.0% 175-7 p442

T03-3719-1051 F03-3791-1481 TLXJ32179

〒153 東京都目黒区東山1-5-4 テラダインビル
 テラダイン(株)
 本多裕一 取締役

AMD Japan Ltd. 100.0% 180-5 p444

T03-3346-7550 F03-3342-5196 TLXJ24064

〒160 東京都新宿区西新宿6-6-2 新宿国際ビル
 日本エイ・エム・ディ(株)
 G.バルザー社長

Cray Research Japan Ltd. 100.0% 114-1 p445

T03-3239-0711 F03-3239-1322

〒102 東京都千代田区一番町6-4 一番町エイトワンビル7階
 日本クレイ(株)
 堀義和代表取締役

Tandem Computers Japan Ltd. 100.0% 300-? p446

T03-3234-6000 F03-3234-6310 TLXJ33206

〒102 東京都千代田区紀尾井町3-23 文芸春秋新館
 日本タンデムコンピュータズ(株)
 高柳肇社長

Braun Japan K.K. 100.0% 130-1 p450

T045-681-7951 F045-681-7045

〒231 横浜市中区山下町25
 ブラウン・ジャパン(株)
 J. T. バウリ社長

Microsoft Co., Ltd. 100.0% 200-? p451

T03-3363-1200 F03-3363-1281

〒160 東京都新宿区西新宿7-5-25 Kビル16階
 マイクロソフト(株)
 古河享社長

Raychem, (K.K.) 100.0% 116-? p453

T045-972-7100 F045-972-1862 TLXJ47846

〒225 横浜市緑区荏田西1-12-17
 (株)レイケム
 大矢毅一郎社長

自動車卸売

Ford Motor Co., Ltd. (Japan) Ltd. 100.0% 180-? p456

T03-5470-2629 F03-5470-2633 TLX242-5055

〒105 東京都港区虎ノ門3-5-1 虎ノ門第37森ビル
 フォード自動車(日本)(株)
 鈴木 弘然 社長

家具、建材卸売

Simmons Japan Ltd. 73.8% 180-? p458

T0462-51-0833 F0462-53-1025

〒228 神奈川県座間市ひばりが丘4-6-259

シモンズ(株)

T.イセトープ社長

その他卸売

Eastman Kodak (Japan) Ltd. 100.0% 234-? p459

T03-5488-2026 F03-5488-4535

〒140 東京都品川区北品川4-7-35 御殿山森ビル

イーストマン・コダック(ジャパン)(株)

R. L. スミス社長

Tower Record Inc. 100.0% 190-? p472

T03-5479-8620 F03-5479-8625

〒140 東京都品川区南品川2-15-9

タワーレコード(株)

???

Nippon Goodyear K.K. 100.0% 205-5 p477

T03-3582-0481 F03-3582-1877

〒107 東京都港区赤坂1-9-13 三会堂ビル

日本グッドイヤー(株)

P. L. シヴァン社長

Kodak Japan Ltd. 51.0% 590-? p478

T03-5488-2570 F03-5488-4535

〒140 東京都品川区北品川4-7-35 御殿山森ビル

日本コダック(株)

澤田卓也社長

Philip Morris K.K. 100.0% 140-10 p486

T03-5562-7200 F03-3588-0754 TLXJ22645

〒107 東京都港区赤坂2-17-22 赤坂ツインタワー本館14階

フィリップ・モリス (株)
R. P. ローバー社長

Fuji Xerox Office Supply Co., Ltd. 50.0% 423-? p486B

T03-3295-6381 F03-3295-6396

〒101 東京都千代田区神田小川町2-12 進興ビル新館
富士ゼロックス・オフィスサプライ (株)
辻端敏彦社長

Bausch & Lomb Co., Ltd. 100.0% 270-2 p489

T03-3455-5651 F03-3455-1239 TLX242-3520

〒108 東京都港区芝5-5-1
ボシュロム・ジャパン (株)
作田忠司社長

R.J.Reynolds / M.C. Tobacco Co., Ltd. 70.0% 327-10 p492

T03-3486-1940 F03-3486-1723 TLXJ32430

〒107 東京都港区南青山7-3-6 南青山第2大京ビル
レイノルズ・エム・シー・タバコ (株)
P. H. ブッシャー社長

運輸 通信

AT&T Japan Ltd. 100.0% 250-50 p548

T03-5561-3000 F03-5561-3130 TLXJ32562

〒106 東京都港区六本木1-4-30 第25森ビル
日本エイ・ティ・アンド・ティ (株)
T. R. シュレーダー社長

Emery Air Freight Japan Corp. 100.0% 115-? p548B

T03-3669-9021 F03-3669-3462 TLX252-4069

〒103 東京都中央区日本橋大伝馬町3-2 秀和第2日本橋本町ビル
日本エメリー航空輸送 (株)
斉藤豊代表取締役

Maruzen Air Express International Ltd. 50.0% 142-? p551

T03-3585-6531 F03-3584-8073 TLX242-3967

〒107 東京都港区赤坂6-2-13
丸全エアエクスプレスインターナショナル(株)
平野収三社長

情報サービス

Interfield Systems Inc. 米国法人 500-? p553

T03-3344-2281 F03-3344-4880

〒163 東京都新宿区西新宿2-1-1 新宿三井ビル5階
インターフィールド・システムズ・インコーポレーテッド(日本支社)
T.A. ガイス社長

Cadam Systems Co., Inc. 50.0% 145-? p555

T03-3491-5648 F03-5496-7491

〒141 東京都品川区大崎3-5-2 エステージ大崎
キャダムシステム(株)
川口博副社長

Fuji Xerox Information Systems Co., Ltd. 50.0% 325-? p564

T03-3378-8011 F03-3378-8145

〒160 東京都新宿区西新宿3-16-6 西新宿水野ビル
富士ゼロックス情報システム(株)
清水眞 社長

Lotus Development Japan, Ltd. 100.0% 130-1 p568

T03-5496-3101 F03-5496-3133

〒141 東京都品川区西五反田8-1-5
ロータス(株)
菊池三郎 社長

SAS LOG

NOTE: Copyright(c) 1989 by SAS Institute Inc., Cary, NC USA.

NOTE: SAS (r) Proprietary Software Release 6.07 TS307

Licensed to MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Site 0001084003.

NOTE: Running on IBM Model 4381 Serial Number 014019.

```

1  /*EDIT OUT
2  1657
3  1674
4  */
5
6  CMS FILEDEF TISHDAT3 DISK TISHDAT3 DAT A;
7  CMS FILEDEF NONSAMPL DISK NONSAMPL DAT A;
8
9  OPTIONS PAGESIZE=44 SORTPGM=BEST;
10 /*
11 TITLE1 'COMPARING AMERICAN SUBSIDIARIES IN JAPAN';
12 TITLE2 'WITH THEIR PARENT FIRMS IN AMERICA.';
13 TITLE3 'PERSONNEL PRACTICES AND IM STRATEGIES';
14 TITLE4 'USED WITH DATA SET: TISHDAT3.DAT (N=55 FIRMS)';
15 *TITLE5 'SLOAN ACCT: EWESTNEY';
16 *TITLE6 'MIT SAS SITE LICENSE 0001084003';
17 *TITLE7 'HITOTSUBASHI ACCT: P200007 S(3000) PW:TISH';
18 */
19 *****;
20 /*
21             TABLE OF CONTENTS
22 0. DATA SET NAMES             LINE 100
23 ii. COMPUTER USAGE NOTES      LINE 202
24 1. PROC FORMAT                 LINE 263
25 2. DATA STATEMENT            LINE 447
26   A. DATA INFILE/INPUT STATEMENT  LINE 471
27   B. ARRAYS TO RENAME MISSING VALUES LINE 540 601
28   C. CREATING NEW VARIABLES      LINE 628
29       BAJ2, BAJ6, BAJ10
30       H78, H910
31
32
33   D. LABELLING ORIG. AND NEW VARS  LINE 652
34   E. MATCHING FORMATS LABELS TO VARS LINE 1011
35 3. CHECKING INPUT W/ PROC CONTENTS LINE 1352
36 4. DESCRIPTIVES: PROC UNIVARIATE  LINE 1359
37   PROC TABULATE (FOR CAT VARS)
38   4B. CATEGORICAL DATA DISPLAY  LINE 1378
39 5. MERGING IN & OUT SAMPLES      LINE 1408
40 6. COMPARING IN & OUT SAMPLE MEANS LINE 1447
41 7. COMPARING IN & OUT SAMPLE
42   CATEGORICAL DATA             LINE 1454
43 8. MEANS ANALYSIS               LINE 1469
44 9. CORRELATIONS                 LINE 1487
45 10. DIFFERENCE INDIVID. VARIABLES LINE 1549
46 11. T TEST OF DIFERENCES IN STEP 10. LINE 1634
47 12. PRINCIPAL COMPONENTS ANALYSIS LINE 1654 1669

```

48 PCA ROUND 3 (LATEST) LINE 1749
 49 13. RECODED VARIABLES AND DIFFS BETWEEN
 50 SUB AND PARENT RECRUITMENT COMPOSITES 1818
 51 14. HYPOTHESIS TESTING USING REGRESSION 1889
 52
 53
 54 LOTTE'S INDICES 2574
 55 PCA RECRUITING 2830
 56 PCA PERFORMANCE APPRAISAL 3750
 57 SINGLE PRACTICE REGRESSIONS 2840
 58 BLOCK HYPOTH TESTING 4020
 59

60
 61 *****
 62 DATA SET NAMES
 63 *****
 64

65 DATASET NAME CHANGES OR INCLUSIONS
 66
 67
 68
 69 TISHDAT3 ORIGINAL DATA SET
 70
 71 TISHNEW1 TISHDAT3
 72 LABELS
 73 ARRAYS
 74
 75 TISHNEW2 TISHNEW1
 76 DIF VARS ON PRACTICES
 77 H18R N15R DIFPUJ1-7
 78 DIFB1-15 DIFC1-14 DIFD1-4
 79 DIFE1-13 DIFF1-12 DIFG1-5
 80
 81 TISHNEW3 TISHNEW1 Plus:
 82 New Vars: H78, H910
 83 COMBINED H7/H8, H9/H10, SAME CATEGORIES
 84 H78 H910 BASW2 BJSW2 BASW6 BJSW6
 85 JSMW9 JSMW10-12
 86
 87 TISHNEW4 TISHNEW 3 Plus:
 88 New Vars: BAJ2, BAJ6, BAJ9-15
 89 COMBINED BA OR BJ, SAME CATEGORIES
 90 BJ10H BJ11H BJ14H
 91
 92 TISHNEW5 TISHNEW4 Plus:
 93 Reversed Vars: H2R, R12R
 94 N3R, N4R, N5R, N12R, N15R
 95 Also: N14R
 96
 97 NEW22 TISHNEW4 Plus:
 98 DIFBCT 1-15, grouped <.5, <1, >1
 99
 100 NONSAMPL FIRMS NOT INCLUDED IN SAMPLE
 101
 102 MERGDAT2 TISHNEW1
 103 NONSAMPL
 104

```

105      PBA3      TISHNEW1 plus:
106                Run3 Principal Comp: PAR (Am) recruit/sel
107
108      PBJ3      Run3 Principal Compt: SUB (J) Recruit/sel
109                Plus PBA3 AND
110                Diffs in Recruit Composites Select PCs
111
112      HDAT1A     PBJ3 PLUS PCs for Independent Variables
113
114      HDAT1B     Contains HDAT1A
115                Used in Regression of Mechanisms on Diffs
116                For Hypothesis 1
117
118      PCA2      Tishnew2 plus: principal component perca21
119
120      PCJ2      PCA2 (Includes Tishnew2) plus:
121                principal component perfcj21
122
123      PCJ22     PCJ2 plus Tishnew2
124
125
126      */
127
128
129      *****;
130      /* COMPUTER USAGE NOTES:
131
132      C PROMPT:
133      To get onto mainframe    VM
134
135      READY PROMPT:
136      To add machine memory    CVS 8M
137      To see file listing      FILEL
138      To run SAS                SAS TISHUNV3 (For example)
139      To stop printing          SM VM3812 Q (Get Spoolid)
140                                SM VM3812 FLUSH spoolid
141      To get off the mainframe  LOGOFF
142      To run SAS while logged off #CP DISC
143      To get on when screen reads CP READ SLOAN    B
144
145      To UPload ASCII Files FROM disk in A Drive TO mainframe
146                                Alt T
147                                Return
148                                Type in any word to id self
149                                Return
150                                GET a:\diskfile.sas mainfram.sas
151                                Quit (to get out of uploading)
152
153      To DOWNload ASCII Files from MAINFRAME to Disk Drive
154                                Alt T
155                                Return
156                                Type in any word to id self
157                                Return
158                                PUT mainfram.sas a:\diskfile.sas.
159                                Quit (to get out of downloading)
160      To copy files to another mainframe account:
161      to westney1 from ewestney

```

162 Logon to westney1 (ra93)
 163 Linkacc ewestney w
 164 [pw] nishi
 165 [c]
 166 copy * * c = = a
 167 or copy FN FT FM = = a
 168 To increase RAM memory permanently DIRM STOR 8M
 169 temporarily CVS 8M
 170 To get CMS commands help xedit menu
 171
 172 To compress files
 173 vmarc pack origsasfiles sas a vmarcfile vmarc a
 174 vmarc unpk vmarcfiles vmarc sas a origsasfile sas a
 175 vmarc list origsasfile
 176
 177 To rename files at fileid line
 178 rename / newname sas a
 179
 180 To see who is logged in QN
 181
 182 To cancel printing sm vm3812 q (to find jobidnum)
 183 sm vm3812 cancel jobidnumber
 184
 185 FILE LISTING SCREEN:
 186 To print on laser printer PRT3812
 187 To delete ERASE (= for multiple files)
 188 To rename, copy files at fileid line
 189 rename / newname sas a
 190 copy / newname sas a
 191
 192 CMS EDITOR
 193
 194 IN THE FILE, USING CMS EDITOR:
 195
 196 To see CMS commands on screen help xedit menu
 197
 198 To copy lines CC at far left (in number area)
 199 at beginning and end of part
 200 to be copied
 201 F at beginning of place to be
 202 copied to
 203 Then ENTER key
 204 To move lines mm at far left instead of cc
 205 To delete lines D or DD for multiple lines
 206 Then ENTER key
 207 To add 10 blank lines A10 at far left (number area)
 208 Then ENTER key
 209 To add words F2 to cut line, type word,
 210
 211 To change words CHANGE/oldword/newword/
 212
 213
 214 Then F2 to rejoin line
 215 To insert letters Use INSERT key
 216 To delete letters or words Use DELETE (not backspace) key
 217
 218 To go to the top of the file /top (or :top or Ltop)

219 To go to the end of the file /b
 220 To go to word or line :302 (To go to line 302)
 221 To put current line in center of screen
 222 Replace last 2 digits of line #
 223 with //
 224
 225 To add files Start at insertion point in File
 226 on highlighted line
 227 Type GET TISH2 SAS on
 228 Command Line
 229
 230
 231
 232 To save current file save
 233 To save as new file SAVE newfile sas
 234
 235
 236
 237
 238
 239
 240 SAS NOTES:
 241 COMBINING FILES:
 242 % INCLUDE 'tish3 sas'; SAS Language, p. 371
 243
 244
 245 */
 246 * The following symbols exempt the lines between them
 247 from being run: *;
 248 /*
 249 */
 250
 251 *****;
 252 */
 253 TYPING/ CODING TIPS
 254
 255 -DATA ENTRY:Debbie Corfman, Harrison Goldberg
 256 2464 Mass. Ave., Cambridge, MA 02140
 257 W 864-1723 H 662-2430
 258 Set-up \$50, 45 cnts/ 80 columns data
 259
 260 -STATISTICS CONSULTING: Aline Sayer
 261 F-M Amherst 413-549-6351
 262 T-Th Camb. 617-868-5840
 263 SAYERAL@HUGSE1 \$30/hour
 264
 265 -EAST CAMPUS COMPUTING FACILITY
 266 Nate Charles 617-253-4120 CHARLES@SLOAN.MIT.EDU
 267 John Maglio 617-253-1491
 268 Ray Faith 617-253-6195
 269
 270 -TYPING
 271 Mulberry Studio 52 JFK 864-6693
 272
 273
 274 -QUESTIONNAIRE FORMAT:
 275 Best to divide questionnaire into alphabetically

276 lettered sections (grouped by similarity of answer)
 277 with questions numbered from 1-x within each section.
 278
 279 **-QUANTITATIVE GUESS ANSWERS:**
 280 If possible, have people estimate real quantities or
 281 percentages which produce continuous variables. If
 282 you are forced to provide categories for percentages
 283 to get people to answer the question, make the categories
 284 into equally spaced or divided segments (or combinable)
 285 so that you can use the variable as an interval variable.
 286
 287 **-CODING VARIABLES**
 288 **DON'T BOTHER GIVING VARIABLES IDENTIFIABLE NAMES--**
 289 **KEEP THE NAMES SHORT: I.E. SECTION LETTER AND QUESTION NO.**
 290 After dividing questionnaire into alphabetically
 291 lettered sections (grouped by similarity of answer)
 292 with questions numbered from 1-x within each section.
 293 Then code variables with just the section letter name
 294 and question number name (E.G. A1, B1, C1) to facilitate
 295 array statements (A1-A10 B1-B20 C1-C30).
 296
 297 **-COMPARATIVE VARIABLES (REPEATING FOR DIFFERENT SITUATIONS):**
 298 When distinguishing between Japan and America,
 299 put J and A BEFORE the question number rather
 300 than after so that the letter is always in the
 301 same position for easy transformation. (AJ1 BJ1 CJ1)
 302
 303 **-CODING FORMAT STATEMENTS:**
 304 Make the names short(A10AS, B3BS). For yes/no answer use Y
 305 For answers to scales use Section Letter and S: AS BS CS.
 306 Use same scale for as many variables as possible.
 307
 308 **-CODING MISSING VALUES:** Use . for one or two digit
 309 missing value items (NOT 9 or 99) CONSISTANTLY THROUGHOUT.
 310
 311 **-CODE SHEET:** Using graph paper, map out a code sheet
 312 which includes Question Number/Variable Name,
 313 Column numbers, and Fmt/Scale label, with the
 314 same number of items per page as the original
 315 questionnaire for easy matching and reference,
 316 if this info does not fit cleanly on the questionnaire.
 317
 318 **-IDNUMBERS** are taken from page numbers in the 1992
 319 Toyo Keizai Gaishikei Kigyuu Guide. The first
 320 three digits are the page numbers and the fourth
 321 digit indicates the item number on the
 322 page. (0=Only that item from that page,
 323 1=Item A, 2=Item B, 3=Item C, 4=Item D)
 324
 325 **-DATA FILE CHANGES** require data file name changes in:
 326 _Find all old datasets with :TISHDAT3 on command line
 327 -Line 1: CMS FILEDEF TISHDAT3 DISK TISHDAT3 DAT A
 328 -TITLE5 TO BE USED WITH DATA SET: TISHDAT3 DAT
 329 -3A. INPUTTING VARIABLES WITH AN INFILE STATEMENT:
 330 DATA TISHDAT3 Line 316
 331 INFILE TISHDAT3 Line 317
 332 -3B. USING ARRAYS TO RELABEL MISSING VALUES

```

333          DATA tishnew1
334          SET tishdat3   Line 445
335
336          -ORDER OF TYPING
337          INPUTTING VARIABLES
338          A. #1 FORMATTING
339          B. #2 INPUT STATEMENT
340             -TAB VARIABLES TO LINE UP VERTICALLY
341             -LEAVE EXTRA SPACE AFTER LETTERS FOR 2 DIGIT NO.S
342             COPY TWICE FOR USE IN STEPS C. AND D. BELOW
343          C. #2 LABELING VARIABLES
344          D. #5 MATCHING
345
346          *****;
347          /*
348             ANALYSIS OUTLINE
349
350          A. READING THE DATA
351
352          B. FIRM DESCRIPTIVES (RAW, NON-COMPOSITED DATA)
353
354             1. DESCRIPTIVE STATS- PROC UNIVARIATE
355
356          C. DIFFERENCES BETWEEN JAPANESE AND AMERICAN PRACTICES
357             MEANS TABLE (3 PARTS)
358
359             1. MEANS (TABLE PART 1) (JAPAN VAR1: MEAN S.D. AM. VAR1 M. S.D
360                PROC MEANS; VARS PRACTICES;
361
362             2. ARE J AND A PRACTICES CORRELATED?
363                PROC CORR; VAR AB1 JB1 ETC;
364
365             3. DIFFERENCE BETWEEN MEANS (TABLE PART 2)
366                DA1= AJI-AA1;
367
368             4. WHAT PREDICTS WHETHER CORRELATIONS IN 2 ARE HIGH OR LOW?
369                T TEST OF MEANS DIFFERENCES (TABLE PART 3...
370                NOT CONTROLLING FR ANYTHING
371                DO THEY PERCEIVE A DIFFERENCE BETWEEN J AND A PRACTICES?
372                ARE J AND A DIFFERENCES = 0?
373                PROC MEANS T PRT N MEAN STD; VAR DA1 DA2 DA3;
374
375          C. COMPOSITES OF PRACTICES
376             DESCRIPTIVE STATS OF PRACTICES--PROC UNIVARIATE
377             ARE VARIABLES TO BE COMPOSITED CORRELATED?
378
379          D. DIFFERENCES BETWEEN AM AND J COMPOSITES
380
381          E. REGRESSION MODELS WITH DIFFERENCE SCORESBETWEEN COMPOSITES
382             OUTCOMES
383                CORRELATIONS
384                SCATTERGRAMS
385
386             FINAL REGRESSION MODEL
387             SENSITIVITY ANALYSIS:
388          */
389          *****;

```



```

390
391
392 *-----*
393       1. FORMATTING VARIABLES WITH VALUE STATEMENTS
394 *-----*
395
396 *   *****
397   -KEEP FORMAT/SCALE LABELS SHORT FOR RETYPING IN
398     MATCHING FORMAT LABELS #5
399   -END FORMAT VAR NAMES IN F OR S, NEVER IN A NUMBER.
400
401   *****
402
403 PROC FORMAT;
404
405 VALUE BG      0='X:NO USE OR EMPHASIS'
406               1='LITTLE USE OR EMPHASIS'
407               2='LITTLE USE OR EMPHASIS'
408               3='MODERATE USE OR EMPHASIS'
409               4='MODERATE USE OR EMPHASIS'
410               5='HIGH USE OR EMPHASIS'
411               6='HIGH USE OR EMPHASIS'
412               7='HIGH USE OR EMPHASIS'
413               .='MISSING VALUE';
NOTE: Format BG has been output.
414
415 VALUE HPCT    1='0-9%'
416               2='10-19%'
417               3='20-49%'
418               4='50-79%'
419               5='80-100%'
420               .='MISSING VALUE';
NOTE: Format HPCT has been output.
421
422
423 VALUE HPCTR   5='0-9%'
424               4='10-19%'
425               3='20-49%'
426               2='50-79%'
427               1='80-100%'
428               .='MISSING VALUE';
NOTE: Format HPCTR has been output.
429
430 VALUE HPCT4F  1='0%'
431               2='0-4%'
432               3='5-9%'
433               4='10-19%'
434               5='20-32%'
435               6='33+% '
436               .='MISSING VALUE';
NOTE: Format HPCT4F has been output.
437
438 VALUE HYR56F  1='LESS THAN 1 YEAR'
439               2='1-2 YEARS'
440               3='3-5 YEARS'
441               4='6-9 YEARS'
442               5='MORE THAN 10 YEARS'

```

```
443          .='MISSING VALUE';
NOTE: Format HYR56F has been output.
444
445  VALUE HYR711F  1='NONE'
446                2='LESS THAN 2 YEARS'
447                3='3-5 YEARS'
448                4='6-9 YEARS'
449                5='MORE THAN 10 YEARS'
450          .='MISSING VALUE';
NOTE: Format HYR711F has been output.
451
452  VALUE HYR910F  1='NONE'
453                2='LESS THAN 2 YEARS'
454                3='3-5 YEARS'
455                4='6-9 YEARS'
456                5='MORE THAN 10 YEARS'
457          .='MISSING VALUE';
NOTE: Format HYR910F has been output.
458
459  VALUE HYR78F   1='NONE'
460                2='LESS THAN 2 YEARS'
461                3='3-5 YEARS'
462                4='6-9 YEARS'
463                5='MORE THAN 10 YEARS'
464          .='MISSING VALUE';
NOTE: Format HYR78F has been output.
465
466  VALUE H12F     1='NONE'
467                2='1-2 DAYS'
468                3='3-6 DAYS'
469                4='7-13 DAYS'
470                5='MORE THAN 14 DAYS'
471          .='MISSING VALUE';
NOTE: Format H12F has been output.
472
473  VALUE H13F     1='1-19 EMPLOYEES'
474                2='20-49 EMPLOYEES'
475                3='50-99 EMPLOYEES'
476                4='100-299 EMPLOYEES'
477                5='300-499 EMPLOYEES'
478                6='OVER 500 EMPLOYEES'
479          .='MISSING VALUE';
NOTE: Format H13F has been output.
480
481  VALUE HDATE16F 1='BEFORE 1900'
482                2='1900-1932'
483                3='1933-1949'
484                4='1950-1973'
485                5='1974-1992'
486          .='MISSING VALUE';
NOTE: Format HDATE16F has been output.
487
488  VALUE HDATE18F 1='BEFORE 1971'
489                2='1971-73'
490                3='1974-79'
491                4='1980-1985'
492                5='1986-1992'
```

```
493             .='MISSING VALUE';
NOTE: Format HDATE18F has been output.
494
495     VALUE JS      1='1:LOW'
496                 3='3:MEDIUM'
497                 7='7:HIGH'
498             .='MISSING VALUE';
NOTE: Format JS has been output.
499
500     VALUE KS      1='NEVER'
501                 2='ONCE PER YEAR'
502                 3='TWICE PER YEAR'
503                 4='4-6 TIMES PER YEAR'
504                 5='MONTHLY'
505                 6='WEEKLY'
506                 7='DAILY'
507             .='MISSING VALUE';
NOTE: Format KS has been output.
508
509     VALUE LOCFMT  0='JAPAN'
510                 1='AMERICAN HQ/ HONSHA'
511                 2='ASIA'
512                 3='CANADA'
513                 4='OTHER'
514                 6='DUAL REPORTING: A/J'
515             .='MISSING VALUE';
NOTE: Format LOCFMT has been output.
516
517     VALUE LS      1='1: NOT IMPORTANT'
518                 7='7: IMPORTANT'
519             .='MISSING VALUE';
NOTE: Format LS has been output.
520
521     VALUE N1213F  1='JAPANESE'
522                 2='NON-JAPANESE'
523             .='MISSING VALUE';
NOTE: Format N1213F has been output.
524
525     VALUE N1213FR 0='JAPANESE'
526                 1='NON-JAPANESE'
527             .='MISSING VALUE';
NOTE: Format N1213FR has been output.
528
529     VALUE N14F    1='PARENT'
530                 2='SUBSIDIARY'
531                 3='JOINTLY'
532             .='MISSING VALUE';
NOTE: Format N14F has been output.
533
534     VALUE N14FR   1='PARENT'
535                 0='SUBSIDIARY'
536                 .5='JOINTLY'
537             .='MISSING VALUE';
NOTE: Format N14FR has been output.
538
539     VALUE N15F    1='JAPAN'
540                 2='U.S.'
```

```

541          3='ASIA'
542          4='OTHER'
543          .='MISSING VALUE';
NOTE: Format N15F has been output.
544
545  VALUE N15FR    0='JAPAN'
546          1='U.S.'
547          .5='OTHER'
548          .='MISSING VALUE';
NOTE: Format N15FR has been output.
549
550  VALUE PSNFMT   0=' REPORTS TO NO ONE'
551          10='CEO/ SHACHO'
552          11='EXECUTIVE VP/ FUKUSHACHO'
553          12='VP/MNGG DIR OF 2+ DEPTS/ JOMU TSY'
554          13='VP/EXEC DIR OF 1 DEPT'
555          14='HONBUCHO/JINJI+SOMU TANTO'
556          18='CONTROLLER'
557          19='DUAL REPORTING TO A & J'
558          24='DIR OF 1 DEPT/ JINJI TANTO'
559          25='HRM HEAD/ JINJI BUCHO'
560          35='GEN AFFRS HEAD/ SOMU BUCHO'
561          36='GEN AFFRS TMLDR/ SOMU KACHO'
562          45='PLANNING HEAD/ KIKAKU BUCHO'
563          46='PLANG TMLDR/ KIKAKU KACHO'
564          55='INTL HEAD/ KAIGAI BUCHO'
565          56='INTL TMLDR/ KAIGAI KACHO'
566          65='MULTIPLE DEPTS HEAD/ BUCHO'
567          .='MISSING VALUE';
NOTE: Format PSNFMT has been output.
568
569  VALUE QS       1='1:CONSIDERABLY BELOW AVERAGE'
570          3='3:AVERAGE'
571          7='7:CONSIDERABLY ABOVE AVERAGE'
572          .='MISSING VALUE';
NOTE: Format QS has been output.
573
574  VALUE RS       1='1:DISAGREE'
575          7='7:AGREE'
576          .='MISSING VALUE';
NOTE: Format RS has been output.
577
578  VALUE RSR      7='1:DISAGREE'
579          1='7:AGREE'
580          .='MISSING VALUE';
NOTE: Format RSR has been output.
581
582  VALUE YN       0='YES'
583          1='NO'
584          .='MISSING VALUE';
NOTE: Format YN has been output.
585
586  VALUE YNR      1='YES'
587          0='NO'
588          .='MISSING VALUE';
NOTE: Format YNR has been output.
589

```

```

590 VALUE N15R -1='JAPAN'
591           0='NEITHER JAPAN NOR US'
592           1='AMERICA';
NOTE: Format N15R has been output.
593
594
595 *-----*
596           2. DATA STEP
597           A. INPUTTING VARIABLES WITH AN INFILE STATEMENT
598 *-----*;
599
600 * *****
601 AFTER WRITING DATA STATEMENT (VARIABLES AND COLUMN LOCATIONS)
602 AND DOUBLE CHECKING VARIABLE ENTRY
603 -COPY VAR LIST AND DELETE COLUMN NUMBERS
604 -AFTER DELETING COLUMN NUMBERS AND BEFORE GOING ON,
605 MAKE COPIES OF VARIABLE NAMES FOR USE IN ARRAYS.
606 -STORE ONE COPY OF VARIABLES WITHOUT COLUMN NUMBERS AT FRONT
607 OF PROGRAM FOR LATER USE IN:
608 -MATCHING VARIABLE NAMES TO FORMATS
609 -ARRAYS
610 -LINE UP VARS USING F2 KEY UNDER FIRST LETTER OF VAR NAME
611 FOR USE IN MATCHING VARIABLE NAMES TO FORMATS (#5)
612 -FIRST RUN DATA INFILE INPUT WITHOUT FORMAT STATEMENTS TO SEE
613 IF DATA WILL RUN.
614 -THERE SHOULD BE NO PROC STATEMENTS IN THE DATA STEP WITHOUT
615 FIRST CALLING UP THE DATA WITH "DATATISHDAT3"
616 *****;
617
618
619
620 DATA TISHDAT3;
621     INFILE TISHDAT3 MISSOVER;
622
623 INPUT
624 #1 IDNUM 1-4
625 AMINVEST 5-7 EMPEES 8-12 FORNEMP 13-14 POSN 15-16
626 EXPYRS 17-18 EXPMOS 19-20 ASTRAT1 21 ASTRAT2 22
627 ASTRAT3 23 ASTRAT4 24 ASTRAT5 25
628
629 BJ1 26 BJ2 27 BJ3 28 BJ4 29
630 BJ5 30 BJ6 31 BJ7 32 BJ8 33
631 BJ9 34 BJ10 35 BJ11 36 BJ12 37
632 BJ13 38 BJ14 39 BJ15 40
633 CJ1 41 CJ2 42 CJ3 43 CJ4 44
634 CJ5 45 CJ6 46 CJ7 47 CJ8 48
635 CJ9 49 CJ10 50 CJ11 51 CJ12 52
636 CJ13 53 CJ14 54
637
638 BA1 55 BA2 56 BA3 57 BA4 58
639 BA5 59 BA6 60 BA7 61 BA8 62
640 BA9 63 BA10 64 BA11 65 BA12 66
641 BA13 67 BA14 68 BA15 69
642 CA1 70 CA2 71 CA3 72 CA4 73
643 CA5 74 CA6 75 CA7 76 CA8 77

```

644	CA9 78	CA10 79		
645				
646	#2 IDNUM 1-4			
647	CA11 5	CA12 6	CA13 7	CA14 8
648	DJ1 9	DJ2 10	DJ3 11	DJ4 12
649	EJ1 13	EJ2 14	EJ3 15	EJ4 16
650	EJ5 17	EJ6 18	EJ7 19	EJ8 20
651	EJ9 21	EJ10 22	EJ11 23	EJ12 24
652	EJ13 25			
653				
654	FJ1 26	FJ2 27	FJ3 28	FJ4 29
655	FJ5 30	FJ6 31	FJ7 32	FJ8 33
656	FJ9 34	FJ10 35	FJ11 36	FJ12 37
657	GJ1 38	GJ2 39	GJ3 40	GJ4 41
658	GJ5 42			
659				
660	DA1 43	DA2 44	DA3 45	DA4 46
661	EA1 47	EA2 48	EA3 49	EA4 50
662	EA5 51	EA6 52	EA7 53	EA8 54
663	EA9 55	EA10 56	EA11 57	EA12 58
664	EA13 59			
665				
666	FA1 60	FA2 61	FA3 62	FA4 63
667	FA5 64	FA6 65	FA7 66	FA8 67
668	FA9 68	FA10 69	FA11 70	FA12 71
669	GA1 72	GA2 73	GA3 74	GA4 75
670	GA5 76			
671				
672	H1 76	H2 78	H3 79	
673				
674	#3 IDNUM 1-4	H4 5		
675	H5 6	H6 7	H7 8	H8 9
676	H9 10	H10 11	H11 12	H12 13
677	H13 14	H14 15	H15 16	H16 17
678	H17 18	H18 19	H19 20	H20 21
679				
680	J1 22	J2 23	J3 24	J4 25
681	J5 26	J6 27	J7 28	J8 29
682	J9 30	J10 31	J11 32	J12 33
683	J13 34	J14 35	J15 36	J16 37
684	J17 38	J18 39	J19 40	J20 41
685	J21 42	J22 43	J23 44	
686				
687	KP1 45	KP2 46	KP3 47	KP4 48
688	KP5 49	KP6 50	KP7 51	KP8 52
689	KP9 53	KP10 54	KP11 55	KP12 56
690	KP13 57			
691				
692	KH1 58	KH2 59	KH3 60	KH4 61
693	KH5 62	KH6 63	KH7 64	KH8 65
694	KH9 66	KH10 67	KH11 68	KH12 69
695	KH13 70			
696				
697	L1 71	L2 72	L3 73	L4 74
698	L5 75	L6 76	L7 77	L8 78
699	L9 79			
700				

```

701 #4 IDNUM 1-4
702 M1 5-6 M2 7
703 N1 8 N2 9 N3 10 N4 11
704 N5 12 N6 13 N7 14 N8 15
705 N9 16 N10 17 N11 18 N12 19
706 N13 20 N14 21 N15 22
707
708 PJ1 23 PJ2 24 PJ3 25 PJ4 26
709 PJ5 27 PJ6 28 PJ7 29
710
711 PU1 30 PU2 31 PU3 32 PU4 33
712 PU5 34 PU6 35 PU7 36
713
714 PA1 37 PA2 38 PA3 39 PA4 40
715 PA5 41 PA6 42 PA7 43
716
717 PQ1 44 PQ2 45 PQ3 46 PQ4 47
718 PQ5 48 PQ6 49 PQ7 50
719
720 QS1 51 QS2 52 QS3 53 QS4 54
721 QS5 55 QS6 56 QS7 57 QS8 58
722 QS9 59 QS10 60 QS11 61 QS12 62
723 QS13 63
724
725 QC1 64 QC2 65 QC3 66 QC4 67
726 QC5 68 QC6 69 QC7 70 QC8 71
727 QC9 72 QC10 73 QC11 74 QC12 75
728 QC13 76
729
730 R1 77 R2 78 R3 79
731
732 #5 IDNUM 1-4
733 R4 5 R5 6 R6 7 R7 8
734 R8 9 R9 10 R10 11 R11 12
735 R12 13 R13 14 R14 15 R15 16
736 R16 17 R17 18 R18 19 R19 20
737 R20 21 R21 22 R22 23;
738
739
740 *-----*
741 2B. USING ARRAYS TO RELABEL MISSING VALUES
742 *-----*
743
744 * *****
745 Don't leave any space between MISSO{*} or MISSO{I}
746
747 *****
748

```

NOTE: The infile TISHDAT3 is:
 Filename=TISHDAT3 DAT A1,
 Recfm=V,Lrecl=260,Blksize=264,
 Max data length=256

NOTE: 275 records were read from the infile TISHDAT3.
 The minimum record length was 80.
 The maximum record length was 80.

NOTE: The data set WORK.TISHDAT3 has 55 observations and 309 variables.
 NOTE: Compressing data set WORK.TISHDAT3 decreased size by 50.00 percent.
 Compressed is 3 pages; un-compressed would require 6 pages.

```

749 DATA tishnew1;
750 SET tishdat3;
751
752 ARRAY MISS99{*} POSN M1;
753 DO I=1 TO 2;
754 IF MISS99(I)=99 THEN MISS99(I)=.;
755 END;
756
757 ARRAY MISS9{*}
758 ASTRAT1-ASTRAT2
759 BJ1-BJ15 CJ1-CJ14
760 BA1-BA15 CA1-CA14
761 DJ1-DJ4 EJ1-EJ13 FJ1-FJ12 GJ1-GJ5
762 DA1-DA4 EA1-EA13 FA1-FA12 GA1-GA5
763 H1-H20 J1-J23 KP1-KP13 KH1-KH13 L1-L8 M1 M2 N1-N15
764 PJ1-PJ7 PU1-PU7 PA1-PA7 PQ1-PQ7 QS1-QS13 QC1-QC13 R1-R22;
765 DO I=1 TO 294;
766 IF MISS9(I)=9 THEN MISS9(I)=.;
767 END;
768
769 ARRAY MISS0{*}
770 BJ1-BJ15 CJ1-CJ14
771 BA1-BA15 CA1-CA14
772 DJ1-DJ4 EJ1-EJ13 FJ1-FJ12 GJ1-GJ5
773 DA1-DA4 EA1-EA13 FA1-FA12 GA1-GA5;
774 DO I=1 TO 126;
775 IF MISS0(I)=0 THEN MISS0(I)=.;
776 END;
777
778 SAMPLE=1;
779 *****
780 CODING IDNUMS FOR INDUSTRY
781 *****;
782 IF (1370 <= IDNUM <= 1450) THEN INDUST = 1;
783 IF (1460 <= IDNUM <= 1462) THEN INDUST = 1;
784 IF (1470 <= IDNUM <= 1490) THEN INDUST = 1;
785 IF (1500 <= IDNUM <= 2060) THEN INDUST = 3;
786 IF (2080 <= IDNUM <= 2220) THEN INDUST = 3;
787 IF (2230 <= IDNUM <= 2260) THEN INDUST = 1;
788 IF (2270 <= IDNUM <= 2290) THEN INDUST = 2;
789 IF (2300 <= IDNUM <= 2310) THEN INDUST = 1;
790 IF (2340 <= IDNUM <= 2342) THEN INDUST = 1;
791 IF (2390 <= IDNUM <= 2410) THEN INDUST = 1;
792 IF (2440 <= IDNUM <= 2490) THEN INDUST = 1;
793 IF (2520 <= IDNUM <= 2820) THEN INDUST = 2;
794 IF (2830 <= IDNUM <= 3082) THEN INDUST = 3;
795 IF (3100 <= IDNUM <= 3130) THEN INDUST = 2;
796 IF (3140 <= IDNUM <= 3142) THEN INDUST = 1;
797 IF (3160 <= IDNUM <= 3220) THEN INDUST = 3;
798 IF (3240 <= IDNUM <= 3620) THEN INDUST = 2;
799 IF (3660 <= IDNUM <= 3780) THEN INDUST = 1;
800 IF (4350 <= IDNUM <= 4560) THEN INDUST = 2;
801 IF (4560 <= IDNUM <= 4920) THEN INDUST = 1;

```



```

802 IF (5480 <= IDNUM <= 5680) THEN INDUST = 1;
803
804
805 *-----*
806           MERGING THE INSAMPLE AND OUT OF SAMPLE
807           (CONCATENATING) DATASETS
808 *-----*;
809
810 /*
811 DATA NONSAMPL;
812   INFILE NONSAMPL MISSEVER;
813
814 INPUT
815   IDNUM 1-4  AMINVEST 5-7  EMPEES 8-12  FORNEMP 13-14      1
816   INDUST0 15-16;
817   SAMPLE = 0;
818
819 DATA MERGDAT2;
820   SET TISHNEW1 NONSAMPL;
821   * IF INDUST0 = 1 OR INDUST0 = 3 THEN INDUST = 1;
822
823 PROC PRINT DATA = MERGDAT2;
824   VAR IDNUM AMINVEST EMPEES BJ1 R22;
825 /*
826
827 *-----*
828           COMPARING SAMPLE TO REST OF NONSAMPLED
829           POPULATION IN TERMS OF SIZE, INDUSTRY, EMPEES, EQTY
830           USING TTEST TO COMPARE MEANS OF THESE 2 SAMPLES
831 *-----*;
832
833 *****
834 USING TTEST FOR COMPARING 2 SAMPLES RATHER THAN OBSERVATIONS
835 WITHIN ONE SAMPLE
836 TTest H0=Means are Equal
837 Looking at the variances at p < .05
838   where the H0 is that variances are equal
839 If the variance p > .05, then the variances are equal
840   so look at the Equal line
841 If the value on the equal line is >2,
842   then conclude that company means are different at p<.05
843 *****
844 /*
845 PROC TTEST DATA=MERGDAT2;
846   CLASS SAMPLE;
847
848   VAR IDNUM AMINVEST EMPEES;
849 /*
850
851 *-----*
852           2. DATA STEP
853           C. CREATING NEW VARIABLES
854 *-----*;

```

NOTE: The data set WORK.TISHNEW1 has 55 observations and 312 variables.

NOTE: Compressing data set WORK.TISHNEW1 decreased size by 33.33 percent.

Compressed is 4 pages; un-compressed would require 6 pages.

```
855 DATA TISHNEW2;
856   SET TISHNEW1;
857   /*
858   IF (H18 = 1) THEN H18R = 21;
859   IF (H18 = 2) THEN H18R = 19;
860   IF (H18 = 3) THEN H18R = 13;
861   IF (H18 = 4) THEN H18R = 7;
862   IF (H18 = 5) THEN H18R = 3;
863
864   IF (N15 = 1) THEN N15R = -1;
865   IF (N15 = 2) THEN N15R = 1;
866   IF (N15 = 3) THEN N15R = 0;
867   IF (N15 = 4) THEN N15R = 0;
868
869   DIFPUJ1 = PU1 - PJ1;
870   DIFPUJ2 = PU2 - PJ2;
871   DIFPUJ3 = PU3 - PJ3;
872   DIFPUJ4 = PU4 - PJ4;
873   DIFPUJ5 = PU5 - PJ5;
874   DIFPUJ6 = PU6 - PJ6;
875   DIFPUJ7 = PU7 - PJ7;
876
877   QCIND1 = (QC10 + QC11 + QC12 + QC13);
878
879
880
881   *****
882   J and A Practice Differences
883   *****;
884
885
886   UBA1 = (100)*(BA1);
887   UBA2 = (100)*(BA2);
888   UBA3 = (100)*(BA3);
889   UBA4 = (100)*(BA4);
890   UBA5 = (100)*(BA5);
891   UBA6 = (100)*(BA6);
892   UBA7 = (100)*(BA7);
893   UBA8 = (100)*(BA8);
894   UBA9 = (100)*(BA9);
895   UBA10 = (100)*(BA10);
896   UBA11 = (100)*(BA11);
897   UBA12 = (100)*(BA12);
898   UBA13 = (100)*(BA13);
899   UBA14 = (100)*(BA14);
900   UBA15 = (100)*(BA15);
901
902
903   UBJ1 = (100)*(BJ1);
904   UBJ2 = (100)*(BJ2);
905   UBJ3 = (100)*(BJ3);
906   UBJ4 = (100)*(BJ4);
907   UBJ5 = (100)*(BJ5);
908   UBJ6 = (100)*(BJ6);
909   UBJ7 = (100)*(BJ7);
910   UBJ8 = (100)*(BJ8);
```

```
911   UBJ9 = (100)*(BJ9);
912   UBJ10 = (100)*(BJ10);
913   UBJ11 = (100)*(BJ11);
914   UBJ12 = (100)*(BJ12);
915   UBJ13 = (100)*(BJ13);
916   UBJ14 = (100)*(BJ14);
917   UBJ15 = (100)*(BJ15);
918
919
920   DIFB1 = ABS(BA1 - BJ1);
921   DIFB2 = ABS(BA2 - BJ2);
922   DIFB3 = ABS(BA3 - BJ3);
923   DIFB4 = ABS(BA4 - BJ4);
924   DIFB5 = ABS(BA5 - BJ5);
925   DIFB6 = ABS(BA6 - BJ6);
926   DIFB7 = ABS(BA7 - BJ7);
927   DIFB8 = ABS(BA8 - BJ8);
928   DIFB9 = ABS(BA9 - BJ9);
929   DIFB10 = ABS(BA10 - BJ10);
930   DIFB11 = ABS(BA11 - BJ11);
931   DIFB12 = ABS(BA12 - BJ12);
932   DIFB13 = ABS(BA13 - BJ13);
933   DIFB14 = ABS(BA14 - BJ14);
934   DIFB15 = ABS(BA15 - BJ15);
935
936   DIFC1 = ABS(CA1 - CJ1);
937   DIFC2 = ABS(CA2 - CJ2);
938   DIFC3 = ABS(CA3 - CJ3);
939   DIFC4 = ABS(CA4 - CJ4);
940   DIFC5 = ABS(CA5 - CJ5);
941   DIFC6 = ABS(CA6 - CJ6);
942   DIFC7 = ABS(CA7 - CJ7);
943   DIFC8 = ABS(CA8 - CJ8);
944   DIFC9 = ABS(CA9 - CJ9);
945   DIFC10 = ABS(CA10 - CJ10);
946   DIFC11 = ABS(CA11 - CJ11);
947   DIFC12 = ABS(CA12 - CJ12);
948   DIFC13 = ABS(CA13 - CJ13);
949   DIFC14 = ABS(CA14 - CJ14);
950
951   DIFD1 = ABS(DA1 - DJ1);
952   DIFD2 = ABS(DA2 - DJ2);
953   DIFD3 = ABS(DA3 - DJ3);
954   DIFD4 = ABS(DA4 - DJ4);
955
956   DIFE1 = ABS(EA1 - EJ1);
957   DIFE2 = ABS(EA2 - EJ2);
958   DIFE3 = ABS(EA3 - EJ3);
959   DIFE4 = ABS(EA4 - EJ4);
960   DIFE5 = ABS(EA5 - EJ5);
961   DIFE6 = ABS(EA6 - EJ6);
962   DIFE7 = ABS(EA7 - EJ7);
963   DIFE8 = ABS(EA8 - EJ8);
964   DIFE9 = ABS(EA9 - EJ9);
965   DIFE10 = ABS(EA10 - EJ10);
966   DIFE11 = ABS(EA11 - EJ11);
967   DIFE12 = ABS(EA12 - EJ12);
```

```
968     DIFE13 = ABS(EA13 - EJ13);
969
970     DIFF1 = ABS(FA1 - FJ1);
971     DIFF2 = ABS(FA2 - FJ2);
972     DIFF3 = ABS(FA3 - FJ3);
973     DIFF4 = ABS(FA4 - FJ4);
974     DIFF5 = ABS(FA5 - FJ5);
975     DIFF6 = ABS(FA6 - FJ6);
976     DIFF7 = ABS(FA7 - FJ7);
977     DIFF8 = ABS(FA8 - FJ8);
978     DIFF9 = ABS(FA9 - FJ9);
979     DIFF10 = ABS(FA10 - FJ10);
980     DIFF11 = ABS(FA11 - FJ11);
981     DIFF12 = ABS(FA12 - FJ12);
982
983     DIFG1 = ABS(GA1 - GJ1);
984     DIFG2 = ABS(GA2 - GJ2);
985     DIFG3 = ABS(GA3 - GJ3);
986     DIFG4 = ABS(GA4 - GJ4);
987     DIFG5 = ABS(GA5 - GJ5);
988
989
990
991     DIFMC1 = 100*ABS(CA1 - CJ1);
992     DIFMC2 = 100*ABS(CA2 - CJ2);
993     DIFMC3 = 100*ABS(CA3 - CJ3);
994     DIFMC4 = 100*ABS(CA4 - CJ4);
995     DIFMC5 = 100*ABS(CA5 - CJ5);
996     DIFMC6 = 100*ABS(CA6 - CJ6);
997     DIFMC7 = 100*ABS(CA7 - CJ7);
998     DIFMC8 = 100*ABS(CA8 - CJ8);
999     DIFMC9 = 100*ABS(CA9 - CJ9);
1000    DIFMC10 = 100*ABS(CA10 - CJ10);
1001    DIFMC11 = 100*ABS(CA11 - CJ11);
1002    DIFMC12 = 100*ABS(CA12 - CJ12);
1003    DIFMC13 = 100*ABS(CA13 - CJ13);
1004    DIFMC14 = 100*ABS(CA14 - CJ14);
1005
1006    DATA DDIFC1; SET TISHNEW2;
1007
1008    IF CA1 > 3;
1009    DIFSC1 = ABS(CA1 - CJ1);
1010
1011
1012    DATA DDIFC2; SET DDIFC1;
1013    IF CA2 > 3;
1014    DIFSC2 = ABS(CA2 - CJ2);
1015
1016    DATA DDIFC3; SET DDIFC2;
1017    IF CA3 > 3;
1018    DIFSC3 = ABS(CA3 - CJ3);
1019
1020    DATA DDIFC4; SET DDIFC3;
1021    IF CA4 > 3;
1022    DIFSC4 = ABS(CA4 - CJ4);
1023
1024    DATA DDIFC5; SET DDIFC4;
```

```
1025 IF CA5 > 3;
1026 DIFSC5 = ABS(CA5 - CJ5);
1027
1028 DATA DDIFC6; SET DDIFC5;
1029 IF CA6 > 3;
1030 DIFSC6 = ABS(CA6 - CJ6);
1031
1032 DATA DDIFC7; SET DDIFC6;
1033 IF CA7 > 3;
1034 DIFSC7 = ABS(CA7 - CJ7);
1035
1036 DATA DDIFC8; SET DDIFC7;
1037 IF CA8 > 3;
1038 DIFSC8 = ABS(CA8 - CJ8);
1039
1040 DATA DDIFC9; SET DDIFC8;
1041 IF CA9 > 3;
1042 DIFSC9 = ABS(CA9 - CJ9);
1043
1044 DATA DDIFC10; SET DDIFC9;
1045 IF CA10 > 3;
1046 DIFSC10 = ABS(CA10 - CJ10);
1047
1048 DATA DDIFC11; SET DDIFC10;
1049 IF CA11 > 3;
1050 DIFSC11 = ABS(CA11 - CJ11);
1051
1052 DATA DDIFC12; SET DDIFC11;
1053 IF CA12 > 3;
1054 DIFSC12 = ABS(CA12 - CJ12);
1055
1056 DATA DDIFC13; SET DDIFC12;
1057 IF CA13 > 3;
1058 DIFSC13 = ABS(CA13 - CJ13);
1059
1060 DATA DDIFC14; SET DDIFC13;
1061 IF CA14 > 3;
1062 DIFSC14 = ABS(CA14 - CJ14);
1063
1064
1065 DATA TISHNEW2; SET TISHNEW2;
1066 PROC PRINT DATA = TISHNEW2; VAR CA1-CA14;
1067
1068 PROC PRINT DATA=DDIFC1 ; VAR DIFC1;
1069 PROC PRINT DATA=DDIFC2 ; VAR DIFC2;
1070 PROC PRINT DATA=DDIFC3 ; VAR DIFC3;
1071 PROC PRINT DATA=DDIFC4 ; VAR DIFC4;
1072 PROC PRINT DATA=DDIFC5 ; VAR DIFC5;
1073 PROC PRINT DATA=DDIFC6 ; VAR DIFC6;
1074 PROC PRINT DATA=DDIFC7 ; VAR DIFC7;
1075 PROC PRINT DATA=DDIFC8 ; VAR DIFC8;
1076 PROC PRINT DATA=DDIFC9 ; VAR DIFC9;
1077 PROC PRINT DATA=DDIFC10; VAR DIFC10;
1078 PROC PRINT DATA=DDIFC11; VAR DIFC11;
1079 PROC PRINT DATA=DDIFC12; VAR DIFC12;
1080 PROC PRINT DATA=DDIFC13; VAR DIFC13;
1081 PROC PRINT DATA=DDIFC14; VAR DIFC14;
```

```

1082
1083
1084 PROC PRINT DATA=TISHNEW2;
1085 VAR DIFB1-DIFB15 DIFC1-DIFC14 DIFD1-DIFD4 DIFE1-DIFE13
1086 DIFF1-DIFF12 DIFG1-DIFG5;
1087
1088
1089 PROC MEANS N MEAN STD DATA=TISHNEW2.KEEP;
1090 VAR DIFB1-DIFB15 DIFC1-DIFC14 DIFD1-DIFD4 DIFE1-DIFE13
1091 DIFF1-DIFF12 DIFG1-DIFG5;
1092 */
1093 *****
1094 Combining Sub Head and HRM Am Experience
1095 *****;
1096

```

NOTE: The data set WORK.TISHNEW2 has 55 observations and 312 variables.
NOTE: Compressing data set WORK.TISHNEW2 decreased size by 33.33 percent.
Compressed is 4 pages; un-compressed would require 6 pages.

```

1097 DATA TISHNEW3; SET TISHNEW1;
1098
1099 IF ((H7 = 1) OR (H8 = 1)) THEN H78 = 1;
1100 IF ((H7 = 2) OR (H8 = 2)) THEN H78 = 2;
1101 IF ((H7 = 3) OR (H8 = 3)) THEN H78 = 3;
1102 IF ((H7 = 4) OR (H8 = 4)) THEN H78 = 4;
1103 IF ((H7 = 5) OR (H8 = 5)) THEN H78 = 5;
1104
1105
1106 IF ((H9 = 1) OR (H10 = 1)) THEN H910 = 1;
1107 IF ((H9 = 2) OR (H10 = 2)) THEN H910 = 2;
1108 IF ((H9 = 3) OR (H10 = 3)) THEN H910 = 3;
1109 IF ((H9 = 4) OR (H10 = 4)) THEN H910 = 4;
1110 IF ((H9 = 5) OR (H10 = 5)) THEN H910 = 5;
1111
1112
1113 *****
1114 RECRUITING Hi A and J Emph
1115 *****;
1116
1117 IF (BA2 < 5) THEN BASW2 = 1;
1118 IF (BA2 >= 5) THEN BASW2 = 2;
1119
1120 IF (BJ2 < 5) THEN BJSW2 = 1;
1121 IF (BJ2 >= 5) THEN BJSW2 = 2;
1122
1123 IF (BA6 < 5) THEN BASW6 = 1;
1124 IF (BA6 >= 5) THEN BASW6 = 2;
1125
1126 IF (BJ6 < 5) THEN BJSW6 = 1;
1127 IF (BJ6 >= 5) THEN BJSW6 = 2;
1128
1129 IF (J9 <= 2) THEN JSMW9 = 1;
1130 IF (2 < J9 < 5) THEN JSMW9 = 2;
1131 IF (J9 >= 5) THEN JSMW9 = 3;
1132
1133 IF (J10 <= 2) THEN JSMW10 = 1;

```

```

1134 IF (2 < J10 < 5) THEN JSMW10 = 2;
1135 IF (J10 >= 5) THEN JSMW10 = 3;
1136
1137 IF (J11 <= 2) THEN JSMW11 = 1;
1138 IF (2 < J11 < 5) THEN JSMW11 = 2;
1139 IF (J11 >= 5) THEN JSMW11 = 3;
1140
1141 IF (J12 <= 2) THEN JSMW12 = 1;
1142 IF (2 < J12 < 5) THEN JSMW12 = 2;
1143 IF (J12 >= 5) THEN JSMW12 = 3;
1144
1145
1146
1147 *****
1148 Combining Hi A and J Emph
1149 *****;
1150

```

NOTE: The data set WORK.TISHNEW3 has 55 observations and 322 variables.

NOTE: Compressing data set WORK.TISHNEW3 decreased size by 33.33 percent.

Compressed is 4 pages; un-compressed would require 6 pages.

```

1151 DATA TISHNEW4; SET TISHNEW3;
1152
1153 IF ((BA2 < 5) OR (BJ2 < 5)) THEN BAJ2 = 1;
1154 IF ((BA2 >= 5) AND (BJ2 >= 5)) THEN BAJ2 = 2;
1155
1156 IF ((BA6 < 5) OR (BJ6 < 5)) THEN BAJ6 = 1;
1157 IF ((BA6 >= 5) AND (BJ6 >= 5)) THEN BAJ6 = 2;
1158
1159 IF ((BA9 < 5) OR (BJ9 < 5)) THEN BAJ9 = 1;
1160 IF ((BA9 >= 5) AND (BJ9 >= 5)) THEN BAJ9 = 2;
1161
1162 IF ((BA10 < 5) OR (BJ10 < 5)) THEN BAJ10 = 1;
1163 IF ((BA10 >= 5) AND (BJ10 >= 5)) THEN BAJ10 = 2;
1164
1165 IF ((BA11 < 5) OR (BJ11 < 5)) THEN BAJ11 = 1;
1166 IF ((BA11 >= 5) AND (BJ11 >= 5)) THEN BAJ11 = 2;
1167
1168 IF ((BA14 < 5) OR (BJ14 < 5)) THEN BAJ14 = 1;
1169 IF ((BA14 >= 5) AND (BJ14 >= 5)) THEN BAJ14 = 2;
1170
1171 IF ((BA15 < 5) OR (BJ15 < 5)) THEN BAJ15 = 1;
1172 IF ((BA15 >= 5) AND (BJ15 >= 5)) THEN BAJ15 = 2;
1173
1174
1175 IF ((BAJ2=2) AND (BAJ6=2) AND (BAJ9=2) AND (BAJ10=2)) THEN BAJ26910 = 2;
1176
1177 IF ((BAJ26910 = 2) AND (J12 > 4)) THEN BAJJ12 = 1;
1178 IF ((BAJ26910 NE 2) OR (J12 <= 4)) THEN BAJJ12 = 0;
1179
1180
1181 *****
1182 HOMOGENEITY NEAR THE MEANS
1183 *****;
1184
1185 IF (BJ10 < 4) THEN BJ10H = 1;

```

```

1186 IF ((BJ10 >= 4) AND (BJ10 <= 6)) THEN BJ10H = 2;
1187 IF (BJ10 > 6) THEN BJ10H = 3;
1188
1189 IF (BJ11 < 4) THEN BJ11H = 1;
1190 IF ((BJ11 >= 4) AND (BJ11 <= 6)) THEN BJ11H = 2;
1191 IF (BJ11 > 6) THEN BJ11H = 3;
1192
1193 IF (BJ14 < 4) THEN BJ14H = 1;
1194 IF ((BJ14 >= 4) AND (BJ14 <= 6)) THEN BJ14H = 2;
1195 IF (BJ14 > 6) THEN BJ14H = 3;
1196
1197 IF (BJ15 < 4) THEN BJ15H = 1;
1198 IF (BJ15 >= 4) THEN BJ15H = 2;
1199
1200
1201 IF ((BJ10H=2) AND (BJ11H=2) AND (BJ14H=2) AND (BJ15H=2))
1202 THEN BJ10145 = 2;
1203
1204 IF ((BJ10145 = 2) AND (KP7 > 1)) THEN BJKP7 = 1;
1205 IF ((BJ10145 NE 2) OR (KP7 = 1)) THEN BJKP7 = 0;
1206
1207 *****
1208 Arrays for categorizing DIFB
1209
1210 See SAS Lang and Proc, p. 178: Arrays
1211 Can refer to vars as orig names or Difbct{1}
1212 *****;
1213
1214 /*
1215 DATA NEW22; SET TISHNEW4;
1216
1217 ARRAY DIFBCT{*} DIFB1 DIFB2 DIFB3 DIFB4 DIFB5 DIFB6 DIFB7 DIFB8
1218 DIFB9 DIFB10 DIFB11 DIFB12 DIFB13 DIFB14 DIFB15;
1219 DO I=1 TO 15;
1220 IF DIFBCT{I}<.5 THEN DIFBCT{I}=1;
1221 IF .5<=DIFBCT{I}<1 THEN DIFBCT{I}=2;
1222 IF DIFBCT{I}>=1 THEN DIFBCT{I}=3;
1223 END;
1224 */
1225
1226
1227 *****
1228 Recoding for Hypoth. 3
1229 *****;
1230

```

NOTE: The data set WORK.TISHNEW4 has 55 observations and 337 variables.
NOTE: Compressing data set WORK.TISHNEW4 decreased size by 33.33 percent.
Compressed is 4 pages; un-compressed would require 6 pages.

```

1231 DATA TISHNEW5; SET TISHNEW1;
1232 IF N14=2 THEN N14R=0;
1233 IF N14=3 THEN N14R=.5;
1234
1235
1236 *****
1237 Recoding for Hypoth. 4

```



```

1238          *****;
1239
1240          IF N3=0 THEN N3R=1;
1241          IF N3=1 THEN N3R=0;
1242
1243          IF H2=1 THEN H2R=5;
1244          IF H2=2 THEN H2R=4;
1245          IF H2=3 THEN H2R=3;
1246          IF H2=4 THEN H2R=2;
1247          IF H2=5 THEN H2R=1;
1248
1249          IF N15=2 THEN N15R=1;
1250          IF N15=1 THEN N15R=0;
1251          IF N15=3 THEN N15R=.5;
1252          IF N15=4 THEN N15R=.5;
1253
1254
1255          *****
1256          Recoding for Hypoth. 7
1257          *****;
1258
1259          IF N4=0 THEN N4R=1;
1260          IF N4=1 THEN N4R=0;
1261
1262          IF N5=0 THEN N5R=1;
1263          IF N5=1 THEN N5R=0;
1264
1265
1266
1267          *****
1268          Recoding for Hypoth. 9
1269          *****;
1270
1271          IF N12=2 THEN N12R=1;
1272          IF N12=1 THEN N12R=0;
1273
1274          IF N13=2 THEN N13R=1;
1275          IF N13=1 THEN N13R=0;
1276
1277          IF R21=1 THEN R21R=7;
1278          IF R21=2 THEN R21R=6;
1279          IF R21=3 THEN R21R=5;
1280          IF R21=4 THEN R21R=4;
1281          IF R21=5 THEN R21R=3;
1282          IF R21=6 THEN R21R=2;
1283          IF R21=7 THEN R21R=1;
1284
1285          *-----*
1286          2. DATA STEP
1287          D. LABELING VARIABLES
1288          *-----*;
1289
1290          * *****
1291          -FIRST WRITE DATA STATEMENT (INFILE STATEMENT #5)
1292          -COPY AND DELETE COLUMN NUMBERS
1293          -AFTER DELETING COLUMN NUMBERS AND BEFORE GOING ON,
1294          MAKE TWO COPIES OF LINED UP VARIABLE NAMES FOR USE

```

1295 IN MATCHING VARIABLE NAMES TO FORMATS AND IN ARRAYS.
 1296 -LINE UP USING F2 KEY UNDER FIRST LETTER OF VAR NAME
 1297 -AVOID USING TITLE NAMES THAT INCLUDE CONTRACTIONS OR
 1298 POSSESSIVES, OR REMEMBER TO LEAVE OUT APOSTROPHES.
 1299 -"TXTSTRNG HAS 200+ CHARACTERS" INDICATES THAT YOU SHOULD CHECK
 1300 APOSTROPHES AND SEMICOLONS, ESPECIALLY AT ENDS OF TITLES
 1301 *****
 1302
 1303 LABEL
 1304
 1305 AMINVEST= 'PERCENT FOREIGN INVEST IN SUB'
 1306 EMPEES = 'NUMBER OF EMPLOYEES IN SUB'
 1307 FORNEMP = 'NO. OF FOREIGN EMPLOYEES IN SUB'
 1308 POSN = 'POSITION OF RESPONDENT'
 1309 EXPYRS = 'YRS RESPONDENT SPENT IN CURR PSN'
 1310 EXPMOS = 'ADDL MOS RESPOND SPENT IN CURR PSN'
 1311
 1312 ASTRAT1 = 'HQ EXPECT GAIN MRKTSHARE IN JPN?'
 1313 ASTRAT2 = 'HQ EXPECT PROFITABILITY IN OWN RIGHT?'
 1314 ASTRAT3 = 'HQ EXPECT DEVEL PRODS FOR SALE IN JPN?'
 1315 ASTRAT4 = 'HQ EXPCT DEVEL PRODS FOR GLOBAL APPN?'
 1316 ASTRAT5 = 'HQ EXPCT YOU TO ACT AS LISTENING POST?'
 1317
 1318 BJ1 = 'J USE OF RECRUITMENT FROM SCHOOLS'
 1319 BJ2 = 'J USE OF RECRUITMENT FROM OTHER FIRMS'
 1320 BJ3 = 'J USE OF RECRUITMENT FROM WITHIN'
 1321 BJ4 = 'J USE OF OBJECTIVE SKILL TESTS'
 1322 BJ5 = 'J USE OF PERSONALITY TESTS'
 1323 BJ6 = 'J USE OF HRM AND STAFF INTERVIEWS'
 1324 BJ7 = 'J USE OF REFERENCES'
 1325 BJ8 = 'J RECRUITMENT FROM CERTAIN SCHOOLS ONLY'
 1326 BJ9 = 'J EMPHASIS ON SPECIFIC TECH. SKILLS'
 1327 BJ10 = 'J EMPHASIS ON CREATIVITY/INNOVATIVENESS'
 1328 BJ11 = 'J EMPHASIS ON GENERAL LEARNING ABILITIES'
 1329 BJ12 = 'J EMPHASIS ON COMPLIANCE/OBEDIENCE'
 1330 BJ13 = 'J EMPH ON ABLTY TO FIT INTO FIRM CULTURE'
 1331 BJ14 = 'J EMPH ON WILLINGNESS TO COOPERATE'
 1332 BJ15 = 'J EMPH ON WILLINGNESS TO WORK HARD'
 1333 CJ1 = 'J USE OF FRML/STRUCTRD APPRSL SYSTEMS'
 1334 CJ2 = 'J USE OF INFORMAL APPRAISAL SYSTEMS'
 1335 CJ3 = 'J USE OF NUMERICAL PERF INDICATORS'
 1336 CJ4 = 'J USE OF SUBJ JUDGMENT IN PERF. APPRSL'
 1337 CJ5 = 'J USE OF SELF-ASSESSMENT EVALUATIONS'
 1338 CJ6 = 'J USE OF LONG TERM PERF INDICATORS'
 1339 CJ7 = 'J USE OF MULTIPLE MEASURES OF PERF'
 1340 CJ8 = 'J USE OF MANAGEMENT BY OBJECTIVES'
 1341 CJ9 = 'J USE OF PERFORMANCE STANDARDS'
 1342 CJ10 = 'J USE OF TRAIT MEASUREMENT'
 1343 CJ11 = 'J USE OF PERF. APPRSL. FOR BONUSES'
 1344 CJ12 = 'J USE OF PERF. APPRSL. FOR FEEDBACK'
 1345 CJ13 = 'J PERF APPRSL USE TO CLRFY PERF EXPCTNS'
 1346 CJ14 = 'J PERF APPRSL USE TO DEVEL ABLTIES'
 1347
 1348
 1349 BA1 = 'A USE OF RECRUITMENT FROM SCHOOLS'
 1350 BA2 = 'A USE OF RECRUITMENT FROM OTHER FIRMS'
 1351 BAJ2 = 'A AND J USE OF RECRUITMENT FROM OTHER FIRMS'

1352 BA3 = 'A USE OF RECRUITMENT FROM WITHIN'
 NOTE: Label value for variable BAJ2 has been truncated to a length of 40.

1353 BA4 = 'A USE OF OBJECTIVE SKILL TESTS'
 1354 BA5 = 'A USE OF PERSONALITY TESTS'
 1355 BA6 = 'A USE OF HRM AND STAFF INTERVIEWS'
 1356 BAJ6 = 'A AND J USE OF HRM AND STAFF INTERVIEWS'
 1357 BA7 = 'A USE OF REFERENCES'
 1358 BA8 = 'A RECRUITMENT FROM CERTAIN SCHOOLS ONLY'
 1359 BA9 = 'A EMPHASIS ON SPECIFIC TECH. SKILLS'
 1360 BA10 = 'A EMPHASIS ON CREATIVITY/INNOVATIVENESS'
 1361 BAJ10 = 'A AND J EMPHASIS ON CREATIVITY/INNOVATIVENESS'
 1362 BA11 = 'A EMPHASIS ON GENERAL LEARNING ABILITIES'
 NOTE: Label value for variable BAJ10 has been truncated to a length of 40.

1363 BA12 = 'A EMPHASIS ON COMPLIANCE/OBEDIENCE'
 1364 BA13 = 'A EMPH ON ABLTY TO FIT INTO CO CULTURE'
 1365 BA14 = 'A EMPHASIS ON WILLINGNESS TO COOPERATE'
 1366 BA15 = 'A EMPHASIS ON WILLINGNESS TO WORK HARD'

1367
 1368 CA1 = 'A USE OF FORMAL/STRUCTURED APPRAISALS'
 1369 CA2 = 'A USE OF INFORMAL APPRAISAL SYSTEMS'
 1370 CA3 = 'A USE OF NUMERICAL PERFORM INDICATORS'
 1371 CA4 = 'A USE OF SUBJ JUDGT IN PERF APPRSL'
 1372 CA5 = 'A USE OF SELF-ASSESSMENT EVALUATIONS'
 1373 CA6 = 'A USE OF LONG TERM PERF INDICATORS'
 1374 CA7 = 'A USE OF MULTIPLE MEASURES OF PERF'
 1375 CA8 = 'A USE OF MANAGEMENT BY OBJECTIVES'
 1376 CA9 = 'A USE OF PERFORMANCE STANDARDS'
 1377 CA10 = 'A USE OF TRAIT MEASUREMENT'
 1378 CA11 = 'A USE OF PERF. APPRSL. FOR BONUSSES'
 1379 CA12 = 'A USE OF PERF. APPRSL. FOR FEEDBACK'
 1380 CA13 = 'A PERF APPRSL USE TO CLRIFY PERF EXPCTNS'
 1381 CA14 = 'A PERF APPRSL USE TO DEVEL ABLTIES'

1382
 1383 DJ1 = 'J USE OF INTERVIEWS FOR FEEDBACK'
 1384 DJ2 = 'J USE OF RESULTS ORIENTED FEEDBACK'
 1385 DJ3 = 'J USE OF PROCESS ORIENTED FEEDBACK'
 1386 DJ4 = 'J USE OF REPORTS/GRAPHS FOR FEEDBACK'
 1387 EJ1 = 'J USE OF INDIVIDUAL INCENTIVE PLANS'
 1388 EJ2 = 'J USE OF GROUP INCENTIVE PLANS'
 1389 EJ3 = 'J USE OF STOCK OWNERSHIP PLANS'
 1390 EJ4 = 'J USE OF FORMAL JOB EVALUATION PLANS'
 1391 EJ5 = 'J USE OF EXTRA PAY FOR MULTIPLE SKILLS'
 1392 EJ6 = 'J USE OF REWARDS FOR EFFIC (CSTS, QNT)'
 1393 EJ7 = 'J USE OF REWARDS FOR INNOVATION'
 1394 EJ8 = 'J USE OF REWARDS FOR QUALITY OF WORK'
 1395 EJ9 = 'J USE OF REWARDS FOR PERSONAL DVLPMNT'
 1396 EJ10 = 'J EMPHASIS ON REWARDING HIGH PERFORMERS'
 1397 EJ11 = 'J EMPH ON MINIMZG FELT PAY INEQUITIES'
 1398 EJ12 = 'J EMPH ON PAYING ABOVE MRKT COMPENSATION'
 1399 EJ13 = 'J EMPHASIS ON PAYING ABOVE MRKT BENEFITS'

1400
 1401 FJ1 = 'J USE OF IN-HOUSE CLASSROOM TRAINING'
 1402 FJ2 = 'J USE OF INFRML COACHING BY SUPERVISORS'
 1403 FJ3 = 'J USE OF EXTERNAL TRAINING'
 1404 FJ4 = 'J USE OF INDIVIDUAL DEVELOPMENT PLANS'
 1405 FJ5 = 'J USE OF CREATIVITY ENHANCEMENT TRAINING'
 1406 FJ6 = 'J USE OF TECHNICAL KNOWLEDGE TRAINING'

1407 FJ7 = 'J USE OF GENERAL PROB SOLVING TRAINING'
 1408 FJ8 = 'J USE OF INTERPERSONAL TRAINING'
 1409 FJ9 = 'J USE OF FOREIGN LANGUAGE TRAINING'
 1410 FJ10 = 'J USE OF FORMAL MENTORING PROGRAMS'
 1411 FJ11 = 'J USE OF ENTRY LVL TRAINING FOR NEW EMPEES'
 1412 FJ12 = 'J USE OF INTL TRAINING FOR EXPATRIATES'
 1413
 1414 GJ1 = 'J USE OF INDIVIDUAL SUGGESTION SYSTEMS'
 1415 GJ2 = 'J USE OF QUALITY CIRCLE TEAMS'
 1416 GJ3 = 'J USE OF TOTAL QUALITY CONTROL PROGRAMS'
 1417 GJ4 = 'J USE OF SELF-MANAGED WORK TEAMS'
 1418 GJ5 = 'J USE OF OTHER PERF. IMPROVEMENT TEAMS'
 1419
 1420 DA1 = 'A USE OF INTERVIEWS FOR FEEDBACK'
 1421 DA2 = 'A USE OF RESULTS ORIENTED FEEDBACK'
 1422 DA3 = 'A USE OF PROCESS ORIENTED FEEDBACK'
 1423 DA4 = 'A USE OF REPORTS/GRAPHS FOR FEEDBACK'
 1424
 1425 EA1 = 'A USE OF INDIVIDUAL INCENTIVE PLANS'
 1426 EA2 = 'A USE OF GROUP INCENTIVE PLANS'
 1427 EA3 = 'A USE OF STOCK OWNERSHIP PLANS'
 1428 EA4 = 'A USE OF FORMAL JOB EVALUATION PLANS'
 1429 EA5 = 'A USE OF EXTRA PAY FOR MULTIPL.E SKILLS'
 1430 EA6 = 'A USE OF REWARDS FOR EFFICIENCY'
 1431 EA7 = 'A USE OF REWARDS FOR INNOVATION'
 1432 EA8 = 'A USE OF REWARDS FOR QUALITY OF WORK'
 1433 EA9 = 'A USE OF REWARDS FOR PERSONAL DVLPMNT'
 1434 EA10 = 'A EMPH ON REWARDING HIGH PERFORMERS'
 1435 EA11 = 'A EMPH ON MINIMIZING FELT PAY INEQUITIES'
 1436 EA12 = 'A EMPH ON PAYING ABOVE MRKT COMPENSATION'
 1437 EA13 = 'A EMPH ON PAYING ABOVE MRKT BENEFITS'
 1438
 1439 FA1 = 'A USE OF IN-HOUSE CLASSROOM TRAINING'
 1440 FA2 = 'A USE OF INFRML COACHING BY SUPERVISORS'
 1441 FA3 = 'A USE OF EXTERNAL TRAINING'
 1442 FA4 = 'A USE OF INDIVIDUAL DEVELOPMENT PLANS'
 1443 FA5 = 'A USE OF CREATIVITY ENHANCEMENT TRAINING'
 1444 FA6 = 'A USE OF TECHNICAL KNOWLEDGE TRAINING'
 1445 FA7 = 'A USE OF GENERAL PROB SOLVING TRAINING'
 1446 FA8 = 'A USE OF INTERPERSONAL TRAINING'
 1447 FA9 = 'A USE OF FOREIGN LANGUAGE TRAINING'
 1448 FA10 = 'A USE OF FORMAL MENTORING PROGRAMS'
 1449 FA11 = 'A USE OF ENTRY LVL TRAINING FOR NEW EMPEES'
 1450 FA12 = 'A USE OF INTNATL TRAINING FOR EXPATS'
 1451
 1452 GA1 = 'A USE OF INDIVIDUAL SUGGESTION SYSTEMS'
 1453 GA2 = 'A USE OF QUALITY CIRCLE TEAMS'
 1454 GA3 = 'A USE OF TOTAL QUALITY CONTROL PROGRAMS'
 1455 GA4 = 'A USE OF SELF-MANAGED WORK TEAMS'
 1456 GA5 = 'A USE OF OTHER PERF. IMPROVEMENT TEAMS'
 1457
 1458 H1 = 'J OPS= WHAT PCNT OF WORLDWIDE SALES?'
 1459 H2 = 'PROPRTN OF PRODS SOLD IN J MFCD IN J'
 1460 H2R= 'R PROPRTN OF PRODS SOLD IN J MFCD IN J'
 1461 H3 = 'PCNT OF WRKFRC THAT ARE KA-CHO OR ABOVE'
 1462 H4 = 'PCNT OF NON-J MNGRS IN SUB'
 1463 H5 = 'YEARS HRM HEAD HAS BEEN THERE'

1464 H6 = 'AV. TENURE OF HRM HEADS THERE'
 1465 H7 = 'YRS SUB HEAD HAD IN AMERICAN HQ'
 1466 H8 = 'YRS SUB HEAD HAD IN OTHER NON-AM SUBS'
 1467 H78= 'YRS SUB HEAD HAD IN AMERICAN HQ OR OTHER SUBS'
 1468 H9 = 'YRS HRM HEAD HAD IN AM HQ HRM UNIT'
 1469 H10 = 'YRS HRM HEAD HAD IN AM HQ (NOT HRM)'
 1470 H910 = 'YRS HRM HEAD HAD IN AM HQ TOTAL'
 1471 H11 = 'YRS HRM HEAD HAD IN OTHER NON-AM SUBS'
 1472 H12 = 'AMNT OF INTL TRAINING FOR SUB HEAD'
 1473 H13 = 'NO. OF EMPPEES OUTSET OF OPS IN J'
 1474 H14 = 'PROPRTN OF NON-J TOP MNGMNT AT OUTSET'
 1475 H15 = 'PROPRTN OF NON-J EMPPEES AT OUTSET'
 1476 H16 = 'YEAR PARENT FIRM FOUNDED IN U.S.'
 1477 H17 = 'YEAR PARENT FIRM FIRST WENT OVERSEAS'
 1478 H18 = 'YEAR PARENT FIRST BEGAN OPS IN JAPAN'
 1479 H19 = 'YEAR OLDEST J COMPONENT OF SUB BEGAN'
 1480 H20 = 'AM. EQUITY IN SUB. AT OUTSET'
 1481
 1482 J1 = 'CLARITY OF AM. PARENTS CULTURE'
 1483 J2 = 'CLARITY OF AM. PARENTS FUTURE GOALS'
 1484 J3 = 'CLARITY OF AM. PARENTS PRODUCT DOMAIN'
 1485 J4 = 'DEG PARS CULTURE IS SUPPD BY PRACTICES'
 1486 J5 = 'DEG HRM INVOLVED W/ STRAT PLANG IN HQ'
 1487 J6 = 'POWER OF AM. HRM IN STRAT IMPLEMENT'
 1488 J7 = 'STRAT IMPORTANCE OF SUB TO AM. PARENT'
 1489 J8 = 'PARS DESIRE FOR CONSIST AMONG SUBS'
 1490 J9 = 'AMT PAR CONTROL OVR J SUB GEN MNGMNT'
 1491 J10 = 'AMT PAR CONTROL OVR J HRM POLICIES'
 1492 J11 = 'AMT PAR CONTROL OVR J TOT BUDGET'
 1493 J12 = 'AMT PAR CONTROL OVR J HRM BUDGET'
 1494 J13 = 'AMT PAR CONTROL OVR FORN SUB BUDGETS'
 1495 J14 = 'DEG PROD DES EMPHD IN FIRM'
 1496 J15 = 'DEG PROC TECH EMPHD IN FIRM'
 1497 J16 = 'DEG PROCESS IMPROVEMNTS EMPHD IN FIRM'
 1498 J17 = 'DEG INC PROD IMPROV EMPHD IN FIRM'
 1499 J18 = 'DEG OF COMPETITIVE UNCERTAINTY'
 1500 J19 = 'DEG OF ECON UNCERTAINTY'
 1501 J20 = 'DEG OF PERSONNEL UNCERTAINTY'
 1502 J21 = 'AMT OF CHANGE NEC TO MKT PRODS IN J'
 1503 J22 = 'DEG SUB PRODS ARE SIM TO J PRODS'
 1504 J23 = 'AMT OF CHNG PRODS SUBJ TO IN 5 YRS'
 1505
 1506 KP1 = 'SUB HEAD CONTACT W/ TOP AM MNGMNT'
 1507 KP2 = 'SUB HEAD CONTACT W/ HQ HRM'
 1508 KP3 = 'SUB HEAD CONTACT W/ J JV PARTNER'
 1509 KP4 = 'SUB HEAD CONTACT W/ J SUPPLIERS'
 1510 KP5 = 'SUB HEAD CONTACT W/ HEADS OF J FIRMS'
 1511 KP6 = 'SUB HEAD CONTACT W/ J HRM MGRS'
 1512 KP7 = 'SUB HEAD CNTCT W/ HDS OF AM COS IN J'
 1513 KP8 = 'SUB HEAD CONTACT W/ AM HRMS IN J'
 1514 KP9 = 'SUB HEAD CONTACT W/ J CONSULTNTS'
 1515 KP10 = 'SUB HEAD CONTACT W/ AM CONSULTS IN J'
 1516 KP11 = 'SUB HEAD CONTACT W/ AM CHAMB COMM J'
 1517 KP12 = 'SUB HEAD CONTACT W/ AM TRADE ASSNS'
 1518 KP13 = 'SUB HEAD CONTACT W/ OTH SUB MGRS'
 1519 KH1 = 'HRM HEAD CONTACT W/ TOP AM MNGMNT'
 1520 KH2 = 'HRM HEAD CONTACT W/ HQ HRM'

1521 KH3 = 'HRM HEAD CONTACT W/ J JV PARTNER'
 1522 KH4 = 'HRM HEAD CONTACT W/ J SUPPLIERS'
 1523 KH5 = 'HRM HEAD CONTACT W/ HEADS OF J FIRMS'
 1524 KH6 = 'HRM HEAD CONTACT W/ J HRM MGRS'
 1525 KH7 = 'HRM HEAD CNTCT W/ HDS OF AM COS IN J'
 1526 KH8 = 'HRM HEAD CONTACT W/ AM HRMS IN J'
 1527 KH9 = 'HRM HEAD CONTACT W/ J CONSULTNTS'
 1528 KH10 = 'HRM HEAD CONTACT W/ AM CONSULTS IN J'
 1529 KH11 = 'HRM HEAD CONTACT W/ AM CHAMB COMM J'
 1530 KH12 = 'HRM HEAD CONTACT W/ AM TRADE ASSNS'
 1531 KH13 = 'HRM HEAD CONTACT W/ OTH SUB MGRS'
 1532
 1533 L1 = 'IMP OF REGARD BY DIRECT SUPERIOR'
 1534 L2 = 'IMP OF REGARD BY IMMED SUBORDINATES'
 1535 L3 = 'IMP OF REGARD BY LOCAL J CUSTOMERS'
 1536 L4 = 'IMP OF REGARD BY OTH MGRS IN CO'
 1537 L5 = 'IMP OF REGARD BY OTH MGRS IN J COS'
 1538 L6 = 'IMP OF REGARD BY AM MGRS IN J'
 1539 L7 = 'IMP OF REGARD BY PROFSSNL COLLEAGUES'
 1540 L8 = 'IMP OF REGARD BY OTHER'
 1541
 1542 M1 = 'WHO REPORT TO DIRECTLY?'
 1543 M2 = 'LOCATION OF DIRECT SUPERIOR'
 1544
 1545 N1 = 'SUB HEAD EQUAL HRM HEAD'
 1546 N2 = 'ARE YOU IN A JV WITH A J CO'
 1547 N3 = 'DOES SUB EXPORT PRODS TO PAR/OTH SUBS'
 1548 N3R= 'DOES SUB EXPORT PRODS TO PAR/OTH SUBS (R)'
 1549 N4 = 'ENGAGED IN BENCHMARKING OF J COS'
 1550 N4R= 'ENGAGED IN BENCHMARKING OF J COS (R)'
 1551 N5 = 'ENGAGED IN BENCHMARKING OF NON-J COS'
 1552 N5R= 'ENGAGED IN BENCHMARKING OF NON-J COS (R)'
 1553 N6 = 'REFER TO SURVEYS OF J PERS PRACS?'
 1554 N7 = 'REFER TO SURVEYS OF NON-J PERS PRACS?'
 1555 N8 = 'PARTCPD IN SURVEY OF NON-J PERS PRACS?'
 1556 N9 = 'HOSTED AM MGRS IN J'
 1557 N10 = 'INTRODD AM PRODS IN J W/ NO CHNG?'
 1558 N11 = 'MFCR ANY PRODS FOR J BUT NOT AM MKT?'
 1559 N12 = 'NATIONALITY OF SUBSIDIARY HEAD'
 1560 N12R= 'NATIONALITY OF SUBSIDIARY HEAD (R)'
 1561 N13 = 'NATIONALITY OF HRM HEAD'
 1562 N13R= 'NATIONALITY OF HRM HEAD (R)'
 1563 N14 = 'SUB EMPEE HDCNT CONTROLLED BY:'
 1564 N14R= 'SUB EMPEE HDCNT CONTROLLED BY:(R)'
 1565 N15 = 'PRIMARY MARKET TO WHICH SELL:'
 1566 N15R= 'PRIMARY MARKET TO WHICH SELL:(R)'
 1567
 1568 PJ1 = 'DOES SUB HANDLE SALES? '
 1569 PJ2 = 'DOES SUB HANDLE DISTRIBUTION?'
 1570 PJ3 = 'DOES SUB HANDLE AFTER SERVICE?'
 1571 PJ4 = 'DOES SUB HANDLE MARKETING?'
 1572 PJ5 = 'DOES SUB HANDLE RESEARCH/DEVELOPMENT?'
 1573 PJ6 = 'DOES SUB HANDLE MANUFACTURING?'
 1574 PJ7 = 'DOES SUB HANDLE HRM?'
 1575
 1576 PU1 = 'DOES PAR HANDLE SALES?'
 1577 PU2 = 'DOES PAR HANDLE DISTRIBUTION?'

1578 PU3 = 'DOES PAR HANDLE AFTER SERVICE?'
 1579 PU4 = 'DOES PAR HANDLE MARKETING?'
 1580 PU5 = 'DOES PAR HANDLE RESEARCH/DEVELOPMENT?'
 1581 PU6 = 'DOES PAR HANDLE MANUFACTURING?'
 1582 PU7 = 'DOES PAR HANDLE HRM?'
 1583
 1584 PA1 = 'DOES AS HQ HANDLE SALES?'
 1585 PA2 = 'DOES AS HQ HANDLE DISTRIBUTION?'
 1586 PA3 = 'DOES AS HQ HANDLE AFTER SERVICE?'
 1587 PA4 = 'DOES AS HQ HANDLE MARKETING?'
 1588 PA5 = 'DOES AS HQ HANDLE RESEARCH/DEVELOPMENT?'
 1589 PA6 = 'DOES AS HQ HANDLE MANUFACTURING?'
 1590 PA7 = 'DOES AS HQ HANDLE HRM?'
 1591
 1592 PQ1 = 'DOES OTH HANDLE SALES?'
 1593 PQ2 = 'DOES OTH HANDLE DISTRIBUTION?'
 1594 PQ3 = 'DOES OTH HANDLE AFTER SERVICE?'
 1595 PQ4 = 'DOES OTH HANDLE MARKETING?'
 1596 PQ5 = 'DOES OTH HANDLE RESEARCH/DEVELOPMENT?'
 1597 PQ6 = 'DOES OTH HANDLE MANUFACTURING?'
 1598 PQ7 = 'DOES OTH HANDLE HRM?'
 1599
 1600 QS1 = 'SALES GROWTH PERF'
 1601 QS2 = 'MARKET SHARE PERF'
 1602 QS3 = 'OPERATING PROFITS PERF'
 1603 QS4 = 'RETURN ON INVEST PERF'
 1604 QS5 = 'CONTRIB TO CONSOL PROFITS'
 1605 QS6 = 'CONTRIB TO STRAT POSITION'
 1606 QS7 = 'MARKET DEVELOPMENT PERF'
 1607 QS8 = 'COST REDUCTION PERF'
 1608 QS9 = 'NEW PRODUCT DEVELOPMENT'
 1609 QS10 = 'JOB SATISFACTION RATING'
 1610 QS11 = 'TURNOVER RATE OF EMPEES'
 1611 QS12 = 'ABSENTEEISM PERF'
 1612 QS13 = 'EMPEE DEVELOPMENT PERF'
 1613
 1614 QC1 = 'SALES GROWTH TARGETS?'
 1615 QC2 = 'MARKET SHARE TARGETS?'
 1616 QC3 = 'OPERATING PROFITS TARGETS?'
 1617 QC4 = 'RETURN ON INVEST TARGETS?'
 1618 QC5 = 'CONTRIB TO CONSOL TARGETS?'
 1619 QC6 = 'CONTRIB TO STRAT PSN TARGET?'
 1620 QC7 = 'MARKET DEVELOPMENT TARGET?'
 1621 QC8 = 'COST REDUCTION TARGET?'
 1622 QC9 = 'NEW PRODUCT DEVEL TARGET?'
 1623 QC10 = 'JOB SATISFACTION TARGET?'
 1624 QC11 = 'TURNOVER TARGETS?'
 1625 QC12 = 'ABSENTEEISM TARGETS?'
 1626 QC13 = 'EMPEE DEVELOPMENT TARGETS?'
 1627
 1628 R1 = 'COMP IN J STRONG FROM J FIRMS'
 1629 R2 = 'COMP IN J STRONG FROM NON-J FIRMS'
 1630 R3 = 'GLOBAL COMP STRONG FROM J FIRMS'
 1631 R4 = 'GLOBAL COMP STRONG FROM NON-J FIRMS'
 1632 R5 = 'SUB PERS PRACS HAVE CHNGD LITTLE'
 1633 R6 = 'SUB PERS PRACS IN PD OF GREAT CHNG'
 1634 R7 = 'OTH FORN SUB PP IN PD OF GREAT CHNG'

1635 R8 = 'J PERS PRACS IN PD OF GREAT CHNG'
 1636 R9 = 'J PERS PRACS EVOLVING TOWARD AM PP'
 1637 R10 = 'J EMPEES LOOKING FOR MORE AM HRM'
 1638 R11 = 'HQ PERS PRACS SEEN AS QUITE ADVNCD'
 1639 R12 = 'J PERS PRACS SEEN AS QUITE ADVNCD'
 1640 R13 = 'NON-J PERS PRACS SEEN AS ADVNCD'
 1641 R14 = 'LEADING INTL PP FOUND IN J MNCS'
 1642 R15 = 'LEADING INTL PP FOUND IN AM MNCS'
 1643 R16 = 'SUB PERS PRACS SHOULD FOLLOW J PRACS'
 1644 R17 = 'IDEAL HRM SYST IS HYBRID OF J/A PP'
 1645 R18 = 'FUTURE HRM WILL BE HYBRID OF J/A PP'
 1646 R19 = 'HRM IS IMPORTTANT FUNCTION IN PAR'
 1647 R20 = 'HRM IS IMPORTANT FUNCTION IN SUB'
 1648 R21 = 'HRM HEAD IS CAREER HRM MGR'
 1649 R21R= 'HRM HEAD IS CAREER HRM MGR (R)'
 1650 R22 = 'HRM HEAD IS ROTATED INTO HRM'
 1651 SAMPLE= '1 IF INCLUDED IN SAMPLE, 0 IF NOT'
 1652
 1653
 1654 DIFB1 = 'DIF USE OF RECRUITMENT FROM SCHOOLS'
 1655 DIFB2 = 'DIF USE OF RECRUITMENT FROM OTHER FIRMS'
 1656 DIFB3 = 'DIF USE OF RECRUITMENT FROM WITHIN'
 1657 DIFB4 = 'DIF USE OF OBJECTIVE SKILL TESTS'
 1658 DIFB5 = 'DIF USE OF PERSONALITY TESTS'
 1659 DIFB6 = 'DIF USE OF HRM AND STAFF INTERVIEWS'
 1660 DIFB7 = 'DIF USE OF REFERENCES'
 1661 DIFB8 = 'DIF RECRUITMENT FROM CERTAIN SCHOOLS ONLY'
 1662 DIFB9 = 'DIF EMPHASIS ON SPECIFIC TECH. SKILLS'
 1663 DIFB10 = 'DIF EMPHASIS ON CREATIVITY/INNOVATIVENESS'
 1664 DIFB11 = 'DIF EMPHASIS ON GENERAL LEARNING ABILITIES'
 1665 DIFB12 = 'DIF EMPHASIS ON COMPLIANCE/OBEDIENCE'
 1666 DIFB13 = 'DIF EMPH ON ABLTY TO FIT INTO FIRM CULTURE'
 1667 DIFB14 = 'DIF EMPH ON WILLINGNESS TO COOPERATE'
 1668 DIFB15 = 'DIF EMPH ON WILLINGNESS TO WORK HARD'
 1669 DIFC1 = 'DIF USE OF FRML/STRUCTRD APPRSL SYSTEMS'
 1670 DIFC2 = 'DIF USE OF INFORMAL APPRAISAL SYSTEMS'
 1671 DIFC3 = 'DIF USE OF NUMERICAL PERF INDICATORS'
 1672 DIFC4 = 'DIF USE OF SUBJ JUDGMENT IN PERF. APPRSL'
 1673 DIFC5 = 'DIF USE OF SELF-ASSESSMENT EVALUATIONS'
 1674 DIFC6 = 'DIF USE OF LONG TERM PERF INDICATORS'
 1675 DIFC7 = 'DIF USE OF MULTIPLE MEASURES OF PERF'
 1676 DIFC8 = 'DIF USE OF MANAGEMENT BY OBJECTIVES'
 1677 DIFC9 = 'DIF USE OF PERFORMANCE STANDARDS'
 1678 DIFC10 = 'DIF USE OF TRAIT MEASUREMENT'
 1679 DIFC11 = 'DIF USE OF PERF. APPRSL. FOR BONUSES'
 1680 DIFC12 = 'DIF USE OF PERF. APPRSL. FOR FEEDBACK'
 1681 DIFC13 = 'DIF PERF APPRSL USE TO CLRFY PERF EXPCTNS'
 1682 DIFC14 = 'DIF PERF APPRCL USE TO DEVEL ABLTIES';

1683

1684

1685 *-----*

1686 2. DATA STEP

1687 E. MATCHING FORMAT LABELS TO VARIABLES

1688 *-----*;

1689

1690 * *****

1691 SEE SAS6 LANG, P. 293.

1692 FORMAT AND NEWLY CONSTRUCTED VARIABLES MUST COME
1693 AFTER DATA STATEMENT AND BEFORE RUN STATEMENT.
1694 (Best to put new variables in the Infile/Input statement)
1695 LIST VARIABLE NAME FIRST, THEN FMT VARIABLE.
1696 *****
1697
1698 FORMAT
1699
1700 POSN PSNFMT.
1701 ASTRAT1 YN.
1702 ASTRAT2 YN.
1703 ASTRAT3 YN.
1704 ASTRAT4 YN.
1705 ASTRAT5 YN.
1706
1707 BJ1 BG.
1708 BJ2 BG.
1709 BJ3 BG.
1710 BJ4 BG.
1711 BJ5 BG.
1712 BJ6 BG.
1713 BJ7 BG.
1714 BJ8 BG.
1715 BJ9 BG.
1716 BJ10 BG.
1717 BJ11 BG.
1718 BJ12 BG.
1719 BJ13 BG.
1720 BJ14 BG.
1721 BJ15 BG.
1722
1723 CJ1 BG.
1724 CJ2 BG.
1725 CJ3 BG.
1726 CJ4 BG.
1727 CJ5 BG.
1728 CJ6 BG.
1729 CJ7 BG.
1730 CJ8 BG.
1731 CJ9 BG.
1732 CJ10 BG.
1733 CJ11 BG.
1734 CJ12 BG.
1735 CJ13 BG.
1736 CJ14 BG.
1737
1738 BA1 BG.
1739 BA2 BG.
1740 BAJ2 BG.
1741 BA3 BG.
1742 BA4 BG.
1743 BA5 BG.
1744 BA6 BG.
1745 BAJ6 BG.
1746 BA7 BG.
1747 BA8 BG.
1748 BA9 BG.

1749 BA10 BG.
1750 BAJ10 BG.
1751 BA11 BG.
1752 BA12 BG.
1753 BA13 BG.
1754 BA14 BG.
1755 BA15 BG.
1756
1757 CA1 BG.
1758 CA2 BG.
1759 CA3 BG.
1760 CA4 BG.
1761 CA5 BG.
1762 CA6 BG.
1763 CA7 BG.
1764 CA8 BG.
1765 CA9 BG.
1766 CA10 BG.
1767 CA11 BG.
1768 CA12 BG.
1769 CA13 BG.
1770 CA14 BG.
1771
1772 DJ1 BG.
1773 DJ2 BG.
1774 DJ3 BG.
1775 DJ4 BG.
1776
1777 EJ1 BG.
1778 EJ2 BG.
1779 EJ3 BG.
1780 EJ4 BG.
1781 EJ5 BG.
1782 EJ6 BG.
1783 EJ7 BG.
1784 EJ8 BG.
1785 EJ9 BG.
1786 EJ10 BG.
1787 EJ11 BG.
1788 EJ12 BG.
1789 EJ13 BG.
1790
1791 FJ1 BG.
1792 FJ2 BG.
1793 FJ3 BG.
1794 FJ4 BG.
1795 FJ5 BG.
1796 FJ6 BG.
1797 FJ7 BG.
1798 FJ8 BG.
1799 FJ9 BG.
1800 FJ10 BG.
1801 FJ11 BG.
1802 FJ12 BG.
1803
1804 GJ1 BG.
1805 GJ2 BG.

1806 GJ3 BG.
1807 GJ4 BG.
1808 GJ5 BG.
1809
1810 DA1 BG.
1811 DA2 BG.
1812 DA3 BG.
1813 DA4 BG.
1814
1815 EA1 BG.
1816 EA2 BG.
1817 EA3 BG.
1818 EA4 BG.
1819 EA5 BG.
1820 EA6 BG.
1821 EA7 BG.
1822 EA8 BG.
1823 EA9 BG.
1824 EA10 BG.
1825 EA11 BG.
1826 EA12 BG.
1827 EA13 BG.
1828
1829 FA1 BG.
1830 FA2 BG.
1831 FA3 BG.
1832 FA4 BG.
1833 FA5 BG.
1834 FA6 BG.
1835 FA7 BG.
1836 FA8 BG.
1837 FA9 BG.
1838 FA10 BG.
1839 FA11 BG.
1840 FA12 BG.
1841
1842 GA1 BG.
1843 GA2 BG.
1844 GA3 BG.
1845 GA4 BG.
1846 GA5 BG.
1847
1848 H1 HPCT.
1849 H2 HPCT.
1850 H2R HPCTR.
1851 H3 HPCT.
1852 H4 HPCT4F.
1853 H5 HYR56F.
1854 H6 HYR56F.
1855 H7 HYR711F.
1856 H8 HYR711F.
1857 H9 HYR711F.
1858 H10 HYR711F.
1859 H78 HYR78F.
1860 H910 HYR910F.
1861 H11 HYR711F.
1862 H12 H12F.

1863	H13 H13F.
1864	H14 HPCT.
1865	H15 HPCT.
1866	H16 HDATE16F.
1867	H17 HDATE16F.
1868	H18 HDATE18F.
1869	H19 HDATE18F.
1870	H20 HPCT.
1871	
1872	J1 JS.
1873	J2 JS.
1874	J3 JS.
1875	J4 JS.
1876	J5 JS.
1877	J6 JS.
1878	J7 JS.
1879	J8 JS.
1880	J9 JS.
1881	J10 JS.
1882	J11 JS.
1883	J12 JS.
1884	J13 JS.
1885	J14 JS.
1886	J15 JS.
1887	J16 JS.
1888	J17 JS.
1889	J18 JS.
1890	J19 JS.
1891	J20 JS.
1892	J21 JS.
1893	J22 JS.
1894	J23 JS.
1895	
1896	KP1 KS.
1897	KP2 KS.
1898	KP3 KS.
1899	KP4 KS.
1900	KP5 KS.
1901	KP6 KS.
1902	KP7 KS.
1903	KP8 KS.
1904	KP9 KS.
1905	KP10 KS.
1906	KP11 KS.
1907	KP12 KS.
1908	KP13 KS.
1909	
1910	KH1 KS.
1911	KH2 KS.
1912	KH3 KS.
1913	KH4 KS.
1914	KH5 KS.
1915	KH6 KS.
1916	KH7 KS.
1917	KH8 KS.
1918	KH9 KS.
1919	KH10 KS.

1920 KH11 KS.
1921 KH12 KS.
1922 KH13 KS.
1923
1924 L1 LS.
1925 L2 LS.
1926 L3 LS.
1927 L4 LS.
1928 L5 LS.
1929 L6 LS.
1930 L7 LS.
1931
1932 M1 PSNFMT.
1933 M2 LOCFMT.
1934
1935 N1 YN.
1936 N2 YN.
1937 N3 YN.
1938 N3R YNR.
1939 N4 YN.
1940 N4R YNR.
1941 N5 YN.
1942 N5R YNR.
1943 N6 YN.
1944 N7 YN.
1945 N8 YN.
1946 N9 YN.
1947 N10 YN.
1948 N11 YN.
1949 N12 N1213F.
1950 N12R N1213FR.
1951 N13 N1213F.
1952 N13R N1213FR.
1953 N14 N14F.
1954 N14R N14FR.
1955 N15 N15F.
1956 N15R N15FR.
1957
1958 PJ1 YN.
1959 PJ2 YN.
1960 PJ3 YN.
1961 PJ4 YN.
1962 PJ5 YN.
1963 PJ6 YN.
1964 PJ7 YN.
1965
1966 PU1 YN.
1967 PU2 YN.
1968 PU3 YN.
1969 PU4 YN.
1970 PU5 YN.
1971 PU6 YN.
1972 PU7 YN.
1973
1974 PA1 YN.
1975 PA2 YN.
1976 PA3 YN.

1977	PA4 YN.
1978	PA5 YN.
1979	PA6 YN.
1980	PA7 YN.
1981	
1982	PQ1 YN.
1983	PQ2 YN.
1984	PQ3 YN.
1985	PQ4 YN.
1986	PQ5 YN.
1987	PQ6 YN.
1988	PQ7 YN.
1989	
1990	QS1 QS.
1991	QS2 QS.
1992	QS3 QS.
1993	QS4 QS.
1994	QS5 QS.
1995	QS6 QS.
1996	QS7 QS.
1997	QS8 QS.
1998	QS9 QS.
1999	QS10 QS.
2000	QS11 QS.
2001	QS12 QS.
2002	QS13 QS.
2003	
2004	QC1 QS.
2005	QC2 QS.
2006	QC3 QS.
2007	QC4 QS.
2008	QC5 QS.
2009	QC6 QS.
2010	QC7 QS.
2011	QC8 QS.
2012	QC9 QS.
2013	QS10 QS.
2014	QC11 QS.
2015	QC12 QS.
2016	QC13 QS.
2017	
2018	R1 RS.
2019	R2 RS.
2020	R3 RS.
2021	R4 RS.
2022	R5 RS.
2023	R6 RS.
2024	R7 RS.
2025	R8 RS.
2026	R9 RS.
2027	R10 RS.
2028	R11 RS.
2029	R12 RS.
2030	R13 RS.
2031	R14 RS.
2032	R15 RS.
2033	R16 RS.

```

2034 R17 RS.
2035 R18 RS.
2036 R19 RS.
2037 R20 RS.
2038 R21 RS.
2039 R21R RSR.
2040 R22 RS.
2041 N15R N15R.;
2042
2043
2044
2045 RUN;

```

NOTE: The data set WORK.TISHNEW5 has 55 observations and 326 variables.

NOTE: Compressing data set WORK.TISHNEW5 decreased size by 33.33 percent.

Compressed is 4 pages; un-compressed would require 6 pages.

```

2046
2047
2048 *-----*
2049           3. CHECKING THE DATA
2050 *-----*;
2051
2052 *PROC CONTENTS DATA=TISHNEW1;
2053 *RUN;
2054
2055
2056
2057
2058 *-----*
2059           DESCRIPTIVE STATISTICS
2060           4. PROC UNIVARIATE
2061 *-----*;
2062 * *****
2063           -USE ON CONTINUOUS DATA ONLY
2064 *****;
2065 /*
2066 PROC PRINT DATA=TISHNEW4;
2067 VAR IDNUM BJKP7;
2068
2069 PROC PRINT DATA=TISHNEW4;
2070 VAR IDNUM BAJJ12;
2071
2072 PROC UNIVARIATE DATA=TISHNEW1;
2073 VAR ASTRAT1 ASTRAT2 ASTRAT3 ASTRAT4 ASTRAT5 H4;
2074 PROC MEANS N MEAN STD DATA=TISHNEW1;
2075 VAR
2076 AMINVEST EMPEES FORNEMP POSN H4
2077 EXPYRS EXPMOS INDUST;
2078
2079 BJ1-BJ15 CJ1-CJ14
2080
2081 DIFB1-DIFB15
2082 UBJ1-UBJ15 UBA1-UBA15
2083 BA1-BA15 CA1-CA14
2084 DJ1-DJ4 EJ1-EJ13 FJ1-FJ12 GJ1-GJ5
2085 DA1-DA4 EA1-EA13 FA1-FA12 GA1-GA5

```

```

2086 J1-J23 KP1-KP13 KH1-KH13 L1-L9 QS1-QS13 R1-R22;
2087 RUN;
2088
2089
2090 PROC MEANS N MEAN STD DATA=TISHNEW1;
2091 VAK BJ10;
2092 OUTPUT OUT=HOM1 STD=BJ10HOM;
2093
2094 PROC MEANS N MEAN STD DATA=HOM1;
2095 VAR BJ11;
2096 OUTPUT OUT=HOM2 STD=BJ11HOM;
2097
2098 PROC MEANS N MEAN STD DATA=HOM2;
2099 VAR BJ14;
2100 OUTPUT OUT=HOM3 STD=BJ14HOM;
2101
2102 PROC MEANS N MEAN STD DATA=HOM3;
2103 VAR BJ15;
2104 OUTPUT OUT=HOM STD=BJ15HOM;
2105 */
2106 *-----*
2107 4B. CATEGORICAL DATA DISPLAY
2108 PROC FREQ
2109 *-----*;
2110 * *****
2111 -USE FOR CATEGORICAL DATA
2112 *****;
2113 /*
2114 PROC SORT DATA=NEW22;
2115 BY BJ2 BJ6 BJ9 BJ10 BJ11 BJ13 BJ14 BJ15
2116 BA2 BA6 BA10 difb1 difb2 difb3 difb4 difb5 difb6 difb7 difb8
2117 difb9 difb10 jifb11 difb12 difb13 difb14 difb15
2118 H4 H18 J7 J10 J12 J20 N12 N13 N14 R11 R12 R13 H78 H910;
2119
2120 TABLES H1 H2 H3 H4 H7 H8 H9 H10 H16 H17 H18
2121 M2 N1 N3 N10 N11 N12 N13 N14 N15
2122 PJ1 FJ2 PJ3 PJ4 PJ5 PJ6 PJ7
2123 PU1 PU2 PU3 PU4 PU5 PU6 PU7
2124 PA1 PA2 PA3 PA4 PA5 PA6 PA7
2125 PQ1 PQ2 PQ3 PQ4 PQ5 PQ6 PQ7;
2126 RUN;
2127
2128 PROC CHART DATA=TISHNEW1;
2129 VBAR H1 H2 H3 H4 H7 H8 H9 H10 H16 H17 H18
2130 M2 N1 N3 N10 N11 N12 N13 N14 N15
2131 PJ1 PJ2 PJ3 PJ4 PJ5 PJ6 PJ7
2132 PU1 PU2 PU3 PU4 PU5 PU6 PU7
2133 PA1 PA2 PA3 PA4 PA5 PA6 PA7
2134 PQ1 PQ2 PQ3 PQ4 PQ5 PQ6 PQ7 / DISCRETE;
2135 RUN;
2136 */
2137 *-----*
2138 4c. CROSS TABS ON HIGHLY
2139 EMPHASIZED PRACTICES IN BOTH
2140 PAR AND SUB
2141 *-----*;
2142 *****THREE WAY TABLES BELOW DONT WORK WITH PROC FREQ*****;

```



```
2143
2144 PROC SORT DATA=TISHNEW4;
2145 BY BASW2 BASW6 BJSW2 BJSW6 JSMW9 JSMW10 JSMW11 JSMW12;
2146
2147 /*
2148 PROC TABULATE DATA=TISHNEW3;
2149
2150
2151
2152 /*
2153 PROC SORT DATA=TISHNEW4;
2154 BY BJ2 BJ6 BJ9 BJ10 BJ11 BJ13 BJ14 BJ15
2155 BA2 BA6 BA10
2156 H4 H18 J7 J10 J12 J20 N12 N13 N14 R11 R12 R13 H78 H910
2157 BAJ9 BAJ10 BAJ11 BJ10H BJ11H BJ14H BJ15H;
2158
2159 PROC FREQ DATA=TISHNEW4;
2160
2161 TABLE H4* BAJ9/ CHISQ MEASURES NOROW NOPERCENT;
2162 TABLE N12* BAJ9/ CHISQ MEASURES NOROW NOPERCENT;
2163 TABLE N13* BAJ9/ CHISQ MEASURES NOROW NOPERCENT;
2164 TABLE R11* BAJ9/ CHISQ MEASURES NOROW NOPERCENT;
2165 TABLE R12* BAJ9/ CHISQ MEASURES NOROW NOPERCENT;
2166 TABLE R13* BAJ9/ CHISQ MEASURES NOROW NOPERCENT;
2167 TABLE J20* BAJ9/ CHISQ MEASURES NOROW NOPERCENT;
2168 TABLE H18* BAJ9/ CHISQ MEASURES NOROW NOPERCENT;
2169
2170 TABLE H4* BAJ10/ CHISQ MEASURES NOROW NOPERCENT;
2171 TABLE N12* BAJ10/ CHISQ MEASURES NOROW NOPERCENT;
2172 TABLE N13* BAJ10/ CHISQ MEASURES NOROW NOPERCENT;
2173 TABLE R11* BAJ10/ CHISQ MEASURES NOROW NOPERCENT;
2174 TABLE R12* BAJ10/ CHISQ MEASURES NOROW NOPERCENT;
2175 TABLE R13* BAJ10/ CHISQ MEASURES NOROW NOPERCENT;
2176 TABLE J20* BAJ10/ CHISQ MEASURES NOROW NOPERCENT;
2177 TABLE H18* BAJ10/ CHISQ MEASURES NOROW NOPERCENT;
2178
2179 TABLE J10* BAJ11/ CHISQ MEASURES NOROW NOPERCENT;
2180 TABLE J12* BAJ11/ CHISQ MEASURES NOROW NOPERCENT;
2181 TABLE N14* BAJ11/ CHISQ MEASURES NOROW NOPERCENT;
2182 TABLE H78* BAJ11/ CHISQ MEASURES NOROW NOPERCENT;
2183 TABLE H910* BAJ11/ CHISQ MEASURES NOROW NOPERCENT;
2184 TABLE J7 * BAJ11/ CHISQ MEASURES NOROW NOPERCENT;
2185 TABLE H4* BAJ11/ CHISQ MEASURES NOROW NOPERCENT;
2186 TABLE N12* BAJ11/ CHISQ MEASURES NOROW NOPERCENT;
2187 TABLE N13* BAJ11/ CHISQ MEASURES NOROW NOPERCENT;
2188 TABLE R11* BAJ11/ CHISQ MEASURES NOROW NOPERCENT;
2189 TABLE R12* BAJ11/ CHISQ MEASURES NOROW NOPERCENT;
2190 TABLE R13* BAJ11/ CHISQ MEASURES NOROW NOPERCENT;
2191 TABLE J20* BAJ11/ CHISQ MEASURES NOROW NOPERCENT;
2192 TABLE H18* BAJ11/ CHISQ MEASURES NOROW NOPERCENT;
2193
2194 TABLE KP7* BJ11H/ CHISQ MEASURES NOROW NOPERCENT;
2195 TABLE KP8* BJ11H/ CHISQ MEASURES NOROW NOPERCENT;
2196 TABLE KP10* BJ11H/ CHISQ MEASURES NOROW NOPERCENT;
2197 TABLE KH7* BJ11H/ CHISQ MEASURES NOROW NOPERCENT;
2198 TABLE KH8* BJ11H/ CHISQ MEASURES NOROW NOPERCENT;
2199 TABLE KH10* BJ11H/ CHISQ MEASURES NOROW NOPERCENT;
```

2200 TABLE H4* BJ11H/ CHISQ MEASURES NOROW NOPERCENT;
2201 TABLE N12* BJ11H/ CHISQ MEASURES NOROW NOPERCENT;
2202 TABLE N13* BJ11H/ CHISQ MEASURES NOROW NOPERCENT;
2203 TABLE R11* BJ11H/ CHISQ MEASURES NOROW NOPERCENT;
2204 TABLE R12* BJ11H/ CHISQ MEASURES NOROW NOPERCENT;
2205 TABLE R13* BJ11H/ CHISQ MEASURES NOROW NOPERCENT;
2206 TABLE J7 * BJ11H/ CHISQ MEASURES NOROW NOPERCENT;
2207 TABLE J20* BJ11H/ CHISQ MEASURES NOROW NOPERCENT;
2208 TABLE H18* BJ11H/ CHISQ MEASURES NOROW NOPERCENT;
2209
2210 TABLE J7 * BJ10H/ CHISQ MEASURES NOROW NOPERCENT;
2211 TABLE J7 * BJ14H/ CHISQ MEASURES NOROW NOPERCENT;
2212 TABLE J7 * BJ15H/ CHISQ MEASURES NOROW NOPERCENT;
2213
2214
2215
2216
2217 TABLE KP7* BJ14H/ CHISQ MEASURES NOROW NOPERCENT;
2218 TABLE KP8* BJ14H/ CHISQ MEASURES NOROW NOPERCENT;
2219 TABLE KP10* BJ14H/ CHISQ MEASURES NOROW NOPERCENT;
2220 TABLE KH7* BJ14H/ CHISQ MEASURES NOROW NOPERCENT;
2221 TABLE KH8* BJ14H/ CHISQ MEASURES NOROW NOPERCENT;
2222 TABLE KH10* BJ14H/ CHISQ MEASURES NOROW NOPERCENT;
2223 TABLE H4* BJ14H/ CHISQ MEASURES NOROW NOPERCENT;
2224 TABLE N12* BJ14H/ CHISQ MEASURES NOROW NOPERCENT;
2225 TABLE N13* BJ14H/ CHISQ MEASURES NOROW NOPERCENT;
2226 TABLE R11* BJ14H/ CHISQ MEASURES NOROW NOPERCENT;
2227 TABLE R12* BJ14H/ CHISQ MEASURES NOROW NOPERCENT;
2228 TABLE R13* BJ14H/ CHISQ MEASURES NOROW NOPERCENT;
2229 TABLE J20* BJ14H/ CHISQ MEASURES NOROW NOPERCENT;
2230 TABLE H18* BJ14H/ CHISQ MEASURES NOROW NOPERCENT;
2231
2232 TABLE KP7* BJ15H/ CHISQ MEASURES NOROW NOPERCENT;
2233 TABLE KP8* BJ15H/ CHISQ MEASURES NOROW NOPERCENT;
2234 TABLE KP10* BJ15H/ CHISQ MEASURES NOROW NOPERCENT;
2235 TABLE KH7* BJ15H/ CHISQ MEASURES NOROW NOPERCENT;
2236 TABLE KH8* BJ15H/ CHISQ MEASURES NOROW NOPERCENT;
2237 TABLE KH10* BJ15H/ CHISQ MEASURES NOROW NOPERCENT;
2238 TABLE H4* BJ15H/ CHISQ MEASURES NOROW NOPERCENT;
2239 TABLE N12* BJ15H/ CHISQ MEASURES NOROW NOPERCENT;
2240 TABLE N13* BJ15H/ CHISQ MEASURES NOROW NOPERCENT;
2241 TABLE R11* BJ15H/ CHISQ MEASURES NOROW NOPERCENT;
2242 TABLE R12* BJ15H/ CHISQ MEASURES NOROW NOPERCENT;
2243 TABLE R13* BJ15H/ CHISQ MEASURES NOROW NOPERCENT;
2244 TABLE J20* BJ15H/ CHISQ MEASURES NOROW NOPERCENT;
2245 TABLE H18* BJ15H/ CHISQ MEASURES NOROW NOPERCENT;
2246
2247 TABLE H4* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2248 TABLE H78* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2249 TABLE H910*BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2250 TABLE H18* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2251 TABLE J7* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2252 TABLE J10* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2253 TABLE J12* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2254 TABLE J20* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2255 TABLE N12* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2256 TABLE N13* BJ11/ CHISQ MEASURES NOROW NOPERCENT;

2257 TABLE N14* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2258 TABLE R11* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2259 TABLE R12* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2260 TABLE R13* BJ10/ CHISQ MEASURES NOROW NOPERCENT;
2261
2262 TABLE H4* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2263 TABLE H78* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2264 TABLE H910*BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2265 TABLE H18* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2266 TABLE J7* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2267 TABLE J10* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2268 TABLE J12* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2269 TABLE J20* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2270 TABLE N12* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2271 TABLE N13* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2272 TABLE N14* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2273 TABLE R11* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2274 TABLE R12* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2275 TABLE R13* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2276
2277 TABLE H4* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2278 TABLE H78* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2279 TABLE H910*BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2280 TABLE H18* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2281 TABLE J7* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2282 TABLE J10* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2283 TABLE J12* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2284 TABLE J20* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2285 TABLE N12* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2286 TABLE N13* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2287 TABLE N14* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2288 TABLE R11* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2289 TABLE R12* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2290 TABLE R13* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2291
2292 TABLE H4* BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2293 TABLE H78* BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2294 TABLE H910*BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2295 TABLE H18* BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2296 TABLE J7* BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2297 TABLE J10* BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2298 TABLE J12* BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2299 TABLE J20* BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2300 TABLE N12* BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2301 TABLE N13* BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2302 TABLE N14* BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2303 TABLE R11* BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2304 TABLE R12* BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2305 TABLE R13* BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2306
2307 TABLE H4* BJ15/ CHISQ MEASURES NOROW NOPERCENT;
2308 TABLE H78* BJ15/ CHISQ MEASURES NOROW NOPERCENT;
2309 TABLE H910*BJ15/ CHISQ MEASURES NOROW NOPERCENT;
2310 TABLE H18* BJ15/ CHISQ MEASURES NOROW NOPERCENT;
2311 TABLE J7* BJ15/ CHISQ MEASURES NOROW NOPERCENT;
2312 TABLE J10* BJ15/ CHISQ MEASURES NOROW NOPERCENT;
2313 TABLE J12* BJ15/ CHISQ MEASURES NOROW NOPERCENT;

```
2314 TABLE J20* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2315 TABLE N12* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2316 TABLE N13* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2317 TABLE N14* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2318 TABLE R11* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2319 TABLE R12* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2320 TABLE R13* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2321  
2322 PROC FREQ DATA=TISHNEW3;  
2323  
2324 TABLE H4* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2325 TABLE H78* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2326 TABLE H910*BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2327 TABLE H18* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2328 TABLE J7* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2329 TABLE J10* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2330 TABLE J12* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2331 TABLE J20* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2332 TABLE N12* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2333 TABLE N13* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2334 TABLE N14* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2335 TABLE R11* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2336 TABLE R12* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2337 TABLE R13* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2338  
2339 TABLE H4* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2340 TABLE H78* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2341 TABLE H910*BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2342 TABLE H18* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2343 TABLE J10* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2344 TABLE J12* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2345 TABLE J20* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2346 TABLE N12* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2347 TABLE N13* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2348 TABLE N14* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2349 TABLE R11* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2350 TABLE R12* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2351 TABLE R13* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2352  
2353 TABLE H4* BA10/ CHISQ MEASURES NOROW NOPERCENT;  
2354 TABLE H78* BA10/ CHISQ MEASURES NOROW NOPERCENT;  
2355 TABLE H910*BA10/ CHISQ MEASURES NOROW NOPERCENT;  
2356 TABLE H18* BA10/ CHISQ MEASURES NOROW NOPERCENT;  
2357 TABLE J7* BA10/ CHISQ MEASURES NOROW NOPERCENT;  
2358 TABLE J10* BA10/ CHISQ MEASURES NOROW NOPERCENT;  
2359 TABLE J12* BA10/ CHISQ MEASURES NOROW NOPERCENT;  
2360 TABLE J20* BA10/ CHISQ MEASURES NOROW NOPERCENT;  
2361 TABLE N12* BA10/ CHISQ MEASURES NOROW NOPERCENT;  
2362 TABLE N13* BA10/ CHISQ MEASURES NOROW NOPERCENT;  
2363 TABLE N14* BA10/ CHISQ MEASURES NOROW NOPERCENT;  
2364 TABLE R11* BA10/ CHISQ MEASURES NOROW NOPERCENT;  
2365 TABLE R12* BA10/ CHISQ MEASURES NOROW NOPERCENT;  
2366 TABLE R13* BA10/ CHISQ MEASURES NOROW NOPERCENT;  
2367  
2368  
2369 TABLE BJ2* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2370 TABLE BJ6* BA6/ CHISQ MEASURES NOROW NOPERCENT;
```

```

2371 TABLE BJ10* BA10/ CHISQ MEASURES NOROW NOPERCENT;
2372 */
2373
2374 *-----*
2375         15. ADDITIONAL CROSSTABS
2376 *-----*;
2377 /*
2378 PROC SORT DATA=NEW22;
2379     BY BJ2 BJ6 BJ9 BJ10 BJ11 BJ13 BJ14 BJ15
2380     BA2 BA6 BA10 difb1 difb2 difb3 difb4 difb5 difb6 difb7 difb8
2381     difb9 difb10 difb11 difb12 difb13 difb14 difb15
2382     H4 H18 J7 J10 J12 J20 N12 N13 N14 R11 R12 R13 H78 H910;
2383
2384 PROC FREQ DATA=NEW22;
2385
2386 TABLE H4*DIFB3 / CHISQ MEASURES NOROW NOPERCENT;
2387 TABLE H78*DIFB3 / CHISQ MEASURES NOROW NOPERCENT;
2388 TABLE H910*DIFB3 / CHISQ MEASURES NOROW NOPERCENT;
2389 TABLE H18*DIFB3 / CHISQ MEASURES NOROW NOPERCENT;
2390 TABLE J7*DIFB3 / CHISQ MEASURES NOROW NOPERCENT;
2391 TABLE J10*DIFB3 / CHISQ MEASURES NOROW NOPERCENT;
2392 TABLE J12*DIFB3 / CHISQ MEASURES NOROW NOPERCENT;
2393 TABLE J20*DIFB3 / CHISQ MEASURES NOROW NOPERCENT;
2394 TABLE N12*DIFB3 / CHISQ MEASURES NOROW NOPERCENT;
2395 TABLE N13*DIFB3 / CHISQ MEASURES NOROW NOPERCENT;
2396 TABLE N14*DIFB3 / CHISQ MEASURES NOROW NOPERCENT;
2397 TABLE R11*DIFB3 / CHISQ MEASURES NOROW NOPERCENT;
2398 TABLE R12*DIFB3 / CHISQ MEASURES NOROW NOPERCENT;
2399 TABLE R13*DIFB3 / CHISQ MEASURES NOROW NOPERCENT;
2400
2401 TABLE H4*DIFB4 / CHISQ MEASURES NOROW NOPERCENT;
2402 TABLE H78*DIFB4 / CHISQ MEASURES NOROW NOPERCENT;
2403 TABLE H910*DIFB4 / CHISQ MEASURES NOROW NOPERCENT;
2404 TABLE H18*DIFB4 / CHISQ MEASURES NOROW NOPERCENT;
2405 TABLE J7*DIFB4 / CHISQ MEASURES NOROW NOPERCENT;
2406 TABLE J10*DIFB4 / CHISQ MEASURES NOROW NOPERCENT;
2407 TABLE J12*DIFB4 / CHISQ MEASURES NOROW NOPERCENT;
2408 TABLE J20*DIFB4 / CHISQ MEASURES NOROW NOPERCENT;
2409 TABLE N12*DIFB4 / CHISQ MEASURES NOROW NOPERCENT;
2410 TABLE N13*DIFB4 / CHISQ MEASURES NOROW NOPERCENT;
2411 TABLE N14*DIFB4 / CHISQ MEASURES NOROW NOPERCENT;
2412 TABLE R11*DIFB4 / CHISQ MEASURES NOROW NOPERCENT;
2413 TABLE R12*DIFB4 / CHISQ MEASURES NOROW NOPERCENT;
2414 TABLE R13*DIFB4 / CHISQ MEASURES NOROW NOPERCENT;
2415
2416 TABLE H4*DIFB10/ CHISQ MEASURES NOROW NOPERCENT;
2417 TABLE H78*DIFB10/ CHISQ MEASURES NOROW NOPERCENT;
2418 TABLE H910*DIFB10/ CHISQ MEASURES NOROW NOPERCENT;
2419 TABLE H18*DIFB10/ CHISQ MEASURES NOROW NOPERCENT;
2420 TABLE J7*DIFB10/ CHISQ MEASURES NOROW NOPERCENT;
2421 TABLE J10*DIFB10/ CHISQ MEASURES NOROW NOPERCENT;
2422 TABLE J12*DIFB10/ CHISQ MEASURES NOROW NOPERCENT;
2423 TABLE J20*DIFB10/ CHISQ MEASURES NOROW NOPERCENT;
2424 TABLE N12*DIFB10/ CHISQ MEASURES NOROW NOPERCENT;
2425 TABLE N13*DIFB10/ CHISQ MEASURES NOROW NOPERCENT;
2426 TABLE N14*DIFB10/ CHISQ MEASURES NOROW NOPERCENT;
2427 TABLE R11*DIFB10/ CHISQ MEASURES NOROW NOPERCENT;

```

```
2428 TABLE R12*DIFB10/ CHISQ MEASURES NOROW NOPERCENT;  
2429 TABLE R13*DIFB10/ CHISQ MEASURES NOROW NOPERCENT;  
2430  
2431 PROC FREQ DATA=TISHNEW3;  
2432  
2433 TABLE H4*BJ2/ CHISQ MEASURES NOROW NOPERCENT;  
2434 TABLE H78*BJ2/ CHISQ MEASURES NOROW NOPERCENT;  
2435 TABLE H910*BJ2/ CHISQ MEASURES NOROW NOPERCENT;  
2436 TABLE H18*BJ2/ CHISQ MEASURES NOROW NOPERCENT;  
2437 TABLE J7*BJ2/ CHISQ MEASURES NOROW NOPERCENT;  
2438 TABLE J10*BJ2/ CHISQ MEASURES NOROW NOPERCENT;  
2439 TABLE J12*BJ2/ CHISQ MEASURES NOROW NOPERCENT;  
2440 TABLE J20*BJ2/ CHISQ MEASURES NOROW NOPERCENT;  
2441 TABLE N12*BJ2/ CHISQ MEASURES NOROW NOPERCENT;  
2442 TABLE N13*BJ2/ CHISQ MEASURES NOROW NOPERCENT;  
2443 TABLE N14*BJ2/ CHISQ MEASURES NOROW NOPERCENT;  
2444 TABLE R11*BJ2/ CHISQ MEASURES NOROW NOPERCENT;  
2445 TABLE R12*BJ2/ CHISQ MEASURES NOROW NOPERCENT;  
2446 TABLE R13*BJ2/ CHISQ MEASURES NOROW NOPERCENT;  
2447  
2448 TABLE H4* BJ6/ CHISQ MEASURES NOROW NOPERCENT;  
2449 TABLE H78* BJ6/ CHISQ MEASURES NOROW NOPERCENT;  
2450 TABLE H910*BJ6/ CHISQ MEASURES NOROW NOPERCENT;  
2451 TABLE H18* BJ6/ CHISQ MEASURES NOROW NOPERCENT;  
2452 TABLE J7* BJ6/ CHISQ MEASURES NOROW NOPERCENT;  
2453 TABLE J10* BJ6/ CHISQ MEASURES NOROW NOPERCENT;  
2454 TABLE J12* BJ6/ CHISQ MEASURES NOROW NOPERCENT;  
2455 TABLE J20* BJ6/ CHISQ MEASURES NOROW NOPERCENT;  
2456 TABLE N12* BJ6/ CHISQ MEASURES NOROW NOPERCENT;  
2457 TABLE N13* BJ6/ CHISQ MEASURES NOROW NOPERCENT;  
2458 TABLE N14* BJ6/ CHISQ MEASURES NOROW NOPERCENT;  
2459 TABLE R11* BJ6/ CHISQ MEASURES NOROW NOPERCENT;  
2460 TABLE R12* BJ6/ CHISQ MEASURES NOROW NOPERCENT;  
2461 TABLE R13* BJ6/ CHISQ MEASURES NOROW NOPERCENT;  
2462  
2463 TABLE H4* BJ9/ CHISQ MEASURES NOROW NOPERCENT;  
2464 TABLE H78* BJ9/ CHISQ MEASURES NOROW NOPERCENT;  
2465 TABLE H910*BJ9/ CHISQ MEASURES NOROW NOPERCENT;  
2466 TABLE H18* BJ9/ CHISQ MEASURES NOROW NOPERCENT;  
2467 TABLE J7* BJ9/ CHISQ MEASURES NOROW NOPERCENT;  
2468 TABLE J10* BJ9/ CHISQ MEASURES NOROW NOPERCENT;  
2469 TABLE J12* BJ9/ CHISQ MEASURES NOROW NOPERCENT;  
2470 TABLE J20* BJ9/ CHISQ MEASURES NOROW NOPERCENT;  
2471 TABLE N12* BJ9/ CHISQ MEASURES NOROW NOPERCENT;  
2472 TABLE N13* BJ9/ CHISQ MEASURES NOROW NOPERCENT;  
2473 TABLE N14* BJ9/ CHISQ MEASURES NOROW NOPERCENT;  
2474 TABLE R11* BJ9/ CHISQ MEASURES NOROW NOPERCENT;  
2475 TABLE R12* BJ9/ CHISQ MEASURES NOROW NOPERCENT;  
2476 TABLE R13* BJ9/ CHISQ MEASURES NOROW NOPERCENT;  
2477  
2478 TABLE H4* BJ10/ CHISQ MEASURES NOROW NOPERCENT;  
2479 TABLE H78* BJ10/ CHISQ MEASURES NOROW NOPERCENT;  
2480 TABLE H910*BJ10/ CHISQ MEASURES NOROW NOPERCENT;  
2481 TABLE H18* BJ10/ CHISQ MEASURES NOROW NOPERCENT;  
2482 TABLE J7* BJ10/ CHISQ MEASURES NOROW NOPERCENT;  
2483 TABLE J10* BJ10/ CHISQ MEASURES NOROW NOPERCENT;  
2484 TABLE J12* BJ10/ CHISQ MEASURES NOROW NOPERCENT;
```

2485 TABLE J20* BJ10/ CHISQ MEASURES NOROW NOPERCENT;
2486 TABLE N12* BJ10/ CHISQ MEASURES NOROW NOPERCENT;
2487 TABLE N13* BJ10/ CHISQ MEASURES NOROW NOPERCENT;
2488 TABLE N14* BJ10/ CHISQ MEASURES NOROW NOPERCENT;
2489 TABLE R11* BJ10/ CHISQ MEASURES NOROW NOPERCENT;
2490 TABLE R12* BJ10/ CHISQ MEASURES NOROW NOPERCENT;
2491 TABLE R13* BJ10/ CHISQ MEASURES NOROW NOPERCENT;
2492
2493 TABLE H4* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2494 TABLE H78* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2495 TABLE H910*BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2496 TABLE H18* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2497 TABLE J7* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2498 TABLE J10* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2499 TABLE J12* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2500 TABLE J20* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2501 TABLE N12* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2502 TABLE N13* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2503 TABLE N14* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2504 TABLE R11* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2505 TABLE R12* BJ11/ CHISQ MEASURES NOROW NOPERCENT;
2506 TABLE R13* BJ10/ CHISQ MEASURES NOROW NOPERCENT;
2507
2508 TABLE H4* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2509 TABLE H78* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2510 TABLE H910*BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2511 TABLE H18* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2512 TABLE J7* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2513 TABLE J10* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2514 TABLE J12* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2515 TABLE J20* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2516 TABLE N12* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2517 TABLE N13* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2518 TABLE N14* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2519 TABLE R11* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2520 TABLE R12* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2521 TABLE R13* BJ12/ CHISQ MEASURES NOROW NOPERCENT;
2522
2523 TABLE H4* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2524 TABLE H78* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2525 TABLE H910*BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2526 TABLE H18* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2527 TABLE J7* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2528 TABLE J10* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2529 TABLE J12* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2530 TABLE J20* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2531 TABLE N12* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2532 TABLE N13* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2533 TABLE N14* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2534 TABLE R11* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2535 TABLE R12* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2536 TABLE R13* BJ13/ CHISQ MEASURES NOROW NOPERCENT;
2537
2538 TABLE H4* BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2539 TABLE H78* BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2540 TABLE H910*BJ14/ CHISQ MEASURES NOROW NOPERCENT;
2541 TABLE H18* BJ14/ CHISQ MEASURES NOROW NOPERCENT;

```
2542 TABLE J7* BJ14/ CHISQ MEASURES NOROW NOPERCENT;  
2543 TABLE J10* BJ14/ CHISQ MEASURES NOROW NOPERCENT;  
2544 TABLE J12* BJ14/ CHISQ MEASURES NOROW NOPERCENT;  
2545 TABLE J20* BJ14/ CHISQ MEASURES NOROW NOPERCENT;  
2546 TABLE N12* BJ14/ CHISQ MEASURES NOROW NOPERCENT;  
2547 TABLE N13* BJ14/ CHISQ MEASURES NOROW NOPERCENT;  
2548 TABLE N14* BJ14/ CHISQ MEASURES NOROW NOPERCENT;  
2549 TABLE R11* BJ14/ CHISQ MEASURES NOROW NOPERCENT;  
2550 TABLE R12* BJ14/ CHISQ MEASURES NOROW NOPERCENT;  
2551 TABLE R13* BJ14/ CHISQ MEASURES NOROW NOPERCENT;  
2552  
2553 TABLE H4* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2554 TABLE H78* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2555 TABLE H910*BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2556 TABLE H18* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2557 TABLE J7* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2558 TABLE J10* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2559 TABLE J12* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2560 TABLE J20* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2561 TABLE N12* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2562 TABLE N13* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2563 TABLE N14* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2564 TABLE R11* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2565 TABLE R12* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2566 TABLE R13* BJ15/ CHISQ MEASURES NOROW NOPERCENT;  
2567  
2568 PROC FREQ DATA=TISHNEW3;  
2569  
2570 TABLE H4* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2571 TABLE H78* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2572 TABLE H910*BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2573 TABLE H18* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2574 TABLE J7* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2575 TABLE J10* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2576 TABLE J12* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2577 TABLE J20* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2578 TABLE N12* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2579 TABLE N13* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2580 TABLE N14* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2581 TABLE R11* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2582 TABLE R12* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2583 TABLE R13* BA2/ CHISQ MEASURES NOROW NOPERCENT;  
2584  
2585 TABLE H4* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2586 TABLE H78* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2587 TABLE H910*BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2588 TABLE H18* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2589 TABLE J10* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2590 TABLE J12* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2591 TABLE J20* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2592 TABLE N12* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2593 TABLE N13* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2594 TABLE N14* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2595 TABLE R11* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2596 TABLE R12* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2597 TABLE R13* BA6/ CHISQ MEASURES NOROW NOPERCENT;  
2598
```



```

2599 TABLE H4* BA10/ CHISQ MEASURES NOROW NOPERCENT;
2600 TABLE H78* BA10/ CHISQ MEASURES NOROW NOPERCENT;
2601 TABLE H910*BA10/ CHISQ MEASURES NOROW NOPERCENT;
2602 TABLE H18* BA10/ CHISQ MEASURES NOROW NOPERCENT;
2603 TABLE J7* BA10/ CHISQ MEASURES NOROW NOPERCENT;
2604 TABLE J10* BA10/ CHISQ MEASURES NOROW NOPERCENT;
2605 TABLE J12* BA10/ CHISQ MEASURES NOROW NOPERCENT;
2606 TABLE J20* BA10/ CHISQ MEASURES NOROW NOPERCENT;
2607 TABLE N12* BA10/ CHISQ MEASURES NOROW NOPERCENT;
2608 TABLE N13* BA10/ CHISQ MEASURES NOROW NOPERCENT;
2609 TABLE N14* BA10/ CHISQ MEASURES NOROW NOPERCENT;
2610 TABLE R11* BA10/ CHISQ MEASURES NOROW NOPERCENT;
2611 TABLE R12* BA10/ CHISQ MEASURES NOROW NOPERCENT;
2612 TABLE R13* BA10/ CHISQ MEASURES NOROW NOPERCENT;
2613
2614
2615 TABLE BJ2* BA2/ CHISQ MEASURES NOROW NOPERCENT;
2616 TABLE BJ6* BA6/ CHISQ MEASURES NOROW NOPERCENT;
2617 TABLE BJ10* BA10/ CHISQ MEASURES NOROW NOPERCENT;
2618 */
2619
2620
2621 */
2622
2623 *-----*
2624 LOTTE'S INDICES
2625 *-----*;
2626 /*
2627 PROC CORR DATA=TISHNEW1 NOSIMPLE;
2628 VAR CA1 CA3 CA5-CA10;
2629 WITH CJ1 CJ3 CJ5-CJ10;
2630
2631
2632 PROC FREQ DATA=TISHNEW4;
2633
2634 TABLE FA1 * FJ1 / NOCOL NOROW NOPERCENT;
2635 TABLE FA2 * FJ2 / NOCOL NOROW NOPERCENT;
2636 TABLE FA3 * FJ3 / NOCOL NOROW NOPERCENT;
2637 TABLE FA4 * FJ4 / NOCOL NOROW NOPERCENT;
2638 TABLE FA5 * FJ5 / NOCOL NOROW NOPERCENT;
2639 TABLE FA6 * FJ6 / NOCOL NOROW NOPERCENT;
2640 TABLE FA7 * FJ7 / NOCOL NOROW NOPERCENT;
2641 TABLE FA8 * FJ8 / NOCOL NOROW NOPERCENT;
2642 TABLE FA11 * FJ11/ NOCOL NOROW NOPERCENT;
2643 TABLE FA12 * FJ12/ NOCOL NOROW NOPERCENT;
2644 */
2645 /*
2646 TABLE CA1 * CJ1 / NOCOL NOROW NOPERCENT;
2647 TABLE CA3 * CJ3 / NOCOL NOROW NOPERCENT;
2648 TABLE CA5 * CJ5 / NOCOL NOROW NOPERCENT;
2649 TABLE CA6 * CJ6 / NOCOL NOROW NOPERCENT;
2650 TABLE CA7 * CJ7 / NOCOL NOROW NOPERCENT;
2651 TABLE CA8 * CJ8 / NOCOL NOROW NOPERCENT;
2652 TABLE CA9 * CJ9 / NOCOL NOROW NOPERCENT;
2653 TABLE CA10 * CJ10/ NOCOL NOROW NOPERCENT;
2654
2655 TABLE CA3 * CJ3 / CHISQ MEASURES NOROW NOPERCENT;

```

```

2656 TABLE CA5 * CJ5 / CHISQ MEASURES NOROW NOPERCENT;
2657 TABLE CA6 * CJ6 / CHISQ MEASURES NOROW NOPERCENT;
2658 TABLE CA7 * CJ7 / CHISQ MEASURES NOROW NOPERCENT;
2659 TABLE CA8 * CJ8 / CHISQ MEASURES NOROW NOPERCENT;
2660 TABLE CA9 * CJ9 / CHISQ MEASURES NOROW NOPERCENT;
2661 TABLE CA10 * CJ10 / CHISQ MEASURES NOROW NOPERCENT;
2662
2663 */
2664
2665
2666 *-----*
2667 7. COMPARING HI, MED, AND LOW CATEGORIES IN SAMPLED
2668 AND NONSAMPLED COMPANIES
2669 BY COMPARING FREQUENCIES USING CHI SQUARED TEST
2670 *-----*;
2671
2672 *****
2673 Use TTest to test whether proportions are same
2674 *****;
2675 /*
2676 PROC FREQ CHISQ NOCOL DATA=MERGDAT2;
2677 TABLES TECH*SAMPLE;
2678 */
2679
2680
2681 *-----*
2682 8. MEANS ANALYSIS
2683 SUBSIDIARY AND PARENT PRACTICES
2684 *-----*;
2685 /*
2686 PROC MEANS N MEAN STD DATA=TISHNEW1;
2687 VAR
2688 AMINVEST EMPEES FORNEMP
2689 BJ1-BJ15 CJ1-CJ14
2690 BA1-BA15 CA1-CA14
2691 DJ1-DJ4 EJ1-EJ13 FJ1-FJ12 GJ1-GJ5
2692 DA1-DA4 EA1-EA13 FA1-FA12 GA1-GA5;
2693 RUN;
2694 */
2695
2696
2697 *-----*
2698 9. MISC. CORRELATIONS
2699 *-----*;
2700 *****
2701 VAR = COLUMN TITLES
2702 WITH = LISTS DOWN, ROW TITLES
2703 *****;
2704
2705 /*
2706 PROC CORR DATA=TISHNEW1 NOSIMPLE;
2707 VAR ASTRAT4 H1 N3;
2708 WITH CA1 CA7 CA8 CA11 CA12 CA13 CA14 DA1 EA4 EA10 EA12 FA1 FA2 FA6
2709 CJ1 CJ7 CJ8 CJ11 CJ12 CJ13 CJ14 DJ1 EJ4 EJ10 EJ12 FJ1 FJ2 FJ6;
2710
2711 PROC CORR NOPROB DATA=TISHNEW1;
2712 VAR ASTRAT1-ASTRAT5;

```

```
2713
2714 PROC CORR NOPROB DATA=TISHNEW1;
2715 VAR PJ1-PJ6 AMINVEST;
2716
2717 PROC CORR NOPROB DATA=TISHNEW1;
2718 VAR PJ1-PJ6 PU1-PU6;
2719
2720 PROC CORR NOPROB DATA=TISHNEW1;
2721 VAR H16 H17 H18 FJ5 PJ6;
2722
2723 PROC CORR NOPROB DATA=TISHNEW1;
2724 VAR M2 POSN H7 H8 EMPEES N2;
2725
2726 PROC CORR NOPROB DATA=TISHNEW1;
2727 VAR N10 N11 N15 H2;
2728 */
2729
2730 *-----*
2731          10. J AND A PRACTICES CORRELATIONS
2732 *-----*
2733
2734 /*
2735 PROC CORR NOPROB DATA=TISHNEW1;
2736 VAR BA1-BA15;
2737
2738 PROC CORR NOPROB DATA=TISHNEW1;
2739 VAR BJ1-BJ15;
2740
2741 PROC CORR NOPROB DATA=TISHNEW1;
2742 VAR CA1-CA14;
2743
2744 PROC CORR NOPROB DATA=TISHNEW1;
2745 VAR CJ1-CJ14;
2746
2747 PROC CORR NOPROB DATA=TISHNEW1;
2748 VAR DA1-DA4;
2749
2750 PROC CORR NOPROB DATA=TISHNEW1;
2751 VAR DJ1-DJ4;
2752
2753 PROC CORR NOPROB DATA=TISHNEW1;
2754 VAR EA1-EA13;
2755
2756 PROC CORR NOPROB DATA=TISHNEW1;
2757 VAR EJ1-EJ13;
2758
2759 PROC CORR NOPROB DATA=TISHNEW1;
2760 VAR FA1-FA12;
2761
2762 PROC CORR NOPROB DATA=TISHNEW1;
2763 VAR FJ1-FJ12;
2764
2765 PROC CORR NOPROB DATA=TISHNEW1;
2766 VAR GA1-GA5;
2767
2768 PROC CORR NOPROB DATA=TISHNEW1;
2769 VAR GJ1-GJ5;
```

```

2770 */
2771
2772 *-----*
2773     11. T TEST OF MEANS DIFFERENCES (TABLE PART 3)
2774     TO PREDICT WHETHER CORRELATIONS IN 6 ARE HIGH OR LOW
2775 *-----*;
2776
2777     *****
2778     For use on comparing observations within one sample
2779     See Paired Comparison TTest, SASSTAT Users'Guide, Vol. 2, p.1369
2780     *****;
2781
2782 /*
2783 PROC MEANS T PRT N MEAN STD DATA=TISHNEW2;
2784
2785 VAR NONSAMPL;
2786 VAR DIFB1-DIFB15 DIFC1-DIFC14 DIFD1-DIFD4 DIFE1-DIFE13
2787 DIFF1-DIFF12 DIFG1-DIFG5;
2788
2789 RUN;
2790 */
2791
2792
2793 *-----*
2794     REGRESSING INDIVIDUAL RECRUITING DIFFERENCES ON PARENTAL
2795     CONTROL VARIABLES J9, J10, J11, J12
2796 *-----*;
2797     *****DIF variables created on line 1034, Dataset Tishnew2;
2798
2799 /*
2800 PROC REG DATA = TISHNEW2.KEEP;
2801
2802 DIFC1J7: MODEL DIFC1 = J7;
2803 DIFC1H11: MODEL DIFC1 = H11;
2804 DC1QC10: MODEL DIFC1 = QC10;
2805
2806 DIFC2J7: MODEL DIFC2 = J7;
2807 DIFC2H11: MODEL DIFC2 = H11;
2808 DC2QC10: MODEL DIFC2 = QC10;
2809
2810 DIFC3J7: MODEL DIFC3 = J7;
2811 DIFC3H11: MODEL DIFC3 = H11;
2812 DC3QC10: MODEL DIFC3 = QC10;
2813
2814 DIFC4J7: MODEL DIFC4 = J7;
2815 DIFC4H11: MODEL DIFC4 = H11;
2816 DC4QC10: MODEL DIFC4 = QC10;
2817
2818 DIFC5J7: MODEL DIFC5 = J7;
2819 DIFC5H11: MODEL DIFC5 = H11;
2820 DC5QC10: MODEL DIFC5 = QC10;
2821
2822 DIFC6J7: MODEL DIFC6 = J7;
2823 DIFC6H11: MODEL DIFC6 = H11;
2824 DC6QC10: MODEL DIFC6 = QC10;
2825
2826 DIFC7J7: MODEL DIFC7 = J7;

```

2827 DIFC7H11: MODEL DIFC7 = H11;
2828 DC7QC10: MODEL DIFC7 = QC10;
2829
2830 DIFC8J7: MODEL DIFC8 = J7;
2831 DIFC8H11: MODEL DIFC8 = H11;
2832 DC8QC10: MODEL DIFC8 = QC10;
2833
2834 DIFC9J7: MODEL DIFC9 = J7;
2835 DIFC9H11: MODEL DIFC9 = H11;
2836 DC9QC10: MODEL DIFC9 = QC10;
2837
2838 DIFC10J7: MODEL DIFC10 = J7;
2839 DC10H11: MODEL DIFC10 = H11;
2840 DC10QC10: MODEL DIFC10 = QC10;
2841
2842 DIFC11J7: MODEL DIFC11 = J7;
2843 DC11H11: MODEL DIFC11 = H11;
2844 DC11QC10: MODEL DIFC11 = QC10;
2845
2846 DIFC12J7: MODEL DIFC12 = J7;
2847 DC12H11: MODEL DIFC12 = H11;
2848 DC12QC10: MODEL DIFC12 = QC10;
2849
2850 DIFC13J7: MODEL DIFC13 = J7;
2851 DC13H11: MODEL DIFC13 = H11;
2852 DC13QC10: MODEL DIFC13 = QC10;
2853
2854 DIFC14J7: MODEL DIFC14 = J7;
2855 DC14H11: MODEL DIFC14 = H11;
2856 DC14QC10: MODEL DIFC14 = QC10;
2857
2858
2859 PROC REG DATA = 'TISHNEW2.KEEP';
2860
2861 DIFC1J7: MODEL DIFMC1 = J7;
2862 DIFC1H11: MODEL DIFMC1 = H11;
2863 DC1QC10: MODEL DIFMC1 = QC10;
2864
2865 DIFC2J7: MODEL DIFMC2 = J7;
2866 DIFC2H11: MODEL DIFMC2 = H11;
2867 DC2QC10: MODEL DIFMC2 = QC10;
2868
2869 DIFC3J7: MODEL DIFMC3 = J7;
2870 DIFC3H11: MODEL DIFMC3 = H11;
2871 DC3QC10: MODEL DIFMC3 = QC10;
2872
2873 DIFC4J7: MODEL DIFMC4 = J7;
2874 DIFC4H11: MODEL DIFMC4 = H11;
2875 DC4QC10: MODEL DIFMC4 = QC10;
2876
2877 DIFC5J7: MODEL DIFMC5 = J7;
2878 DIFC5H11: MODEL DIFMC5 = H11;
2879 DC5QC10: MODEL DIFMC5 = QC10;
2880
2881 DIFC6J7: MODEL DIFMC6 = J7;
2882 DIFC6H11: MODEL DIFMC6 = H11;
2883 DC6QC10: MODEL DIFMC6 = QC10;

```

2884
2885 DIFC7J7: MODEL DIFMC7 = J7;
2886 DIFC7H11: MODEL DIFMC7 = H11;
2887 DC7QC10: MODEL DIFMC7 = QC10;
2888
2889 DIFC8J7: MODEL DIFMC8 = J7;
2890 DIFC8H11: MODEL DIFMC8 = H11;
2891 DC8QC10: MODEL DIFMC8 = QC10;
2892
2893 DIFC9J7: MODEL DIFMC9 = J7;
2894 DIFC9H11: MODEL DIFMC9 = H11;
2895 DC9QC10: MODEL DIFMC9 = QC10;
2896
2897 DIFC10J7: MODEL DIFMC10 = J7;
2898 DC10H11: MODEL DIFMC10 = H11;
2899 DC10QC10: MODEL DIFMC10 = QC10;
2900
2901 DIFC11J7: MODEL DIFMC11 = J7;
2902 DC11H11: MODEL DIFMC11 = H11;
2903 DC11QC10: MODEL DIFMC11 = QC10;
2904
2905 DIFC12J7: MODEL DIFMC12 = J7;
2906 DC12H11: MODEL DIFMC12 = H11;
2907 DC12QC10: MODEL DIFMC12 = QC10;
2908
2909 DIFC13J7: MODEL DIFMC13 = J7;
2910 DC13H11: MODEL DIFMC13 = H11;
2911 DC13QC10: MODEL DIFMC13 = QC10;
2912
2913 DIFC14J7: MODEL DIFMC14 = J7;
2914 DC14H11: MODEL DIFMC14 = H11;
2915 DC14QC10: MODEL DIFMC14 = QC10;
2916 */
2917 *****REGRESSING PRACTICES STRONGLY EMPHD IN PARENT;
2918 /*
2919 PROC CORR DATA=DDIFC1 NOSIMPLE;
2920 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
2921 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
2922 QC1-QC12 R10 R11 R19-R22;
2923 WITH DIFSC1;
2924
2925 PROC CORR DATA=DDIFC2 NOSIMPLE;
2926 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
2927 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
2928 QC1-QC12 R10 R11 R19-R22;
2929 WITH DIFSC2;
2930
2931 PROC CORR DATA=DDIFC3 NOSIMPLE;
2932 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
2933 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
2934 QC1-QC12 R10 R11 R19-R22;
2935 WITH DIFSC3;
2936
2937 PROC CORR DATA=DDIFC4 NOSIMPLE;
2938 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
2939 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
2940 QC1-QC12 R10 R11 R19-R22;

```

```
2941 WITH DIFSC4;
2942
2943 PROC CORR DATA=DDIFC4 NOSIMPLE;
2944 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
2945 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
2946 QC1-QC12 R10 R11 R19-R22;
2947 WITH DIFSC4;
2948
2949
2950 PROC CORR DATA=DDIFC5 NOSIMPLE;
2951 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
2952 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
2953 QC1-QC12 R10 R11 R19-R22;
2954 WITH DIFSC5;
2955
2956 PROC CORR DATA=DDIFC6 NOSIMPLE;
2957 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
2958 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
2959 QC1-QC12 R10 R11 R19-R22;
2960 WITH DIFSC6;
2961
2962 PROC CORR DATA=DDIFC7 NOSIMPLE;
2963 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
2964 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
2965 QC1-QC12 R10 R11 R19-R22;
2966 WITH DIFSC7;
2967
2968 PROC CORR DATA=DDIFC8 NOSIMPLE;
2969 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
2970 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
2971 QC1-QC12 R10 R11 R19-R22;
2972 WITH DIFSC8;
2973
2974 PROC CORR DATA=DDIFC9 NOSIMPLE;
2975 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
2976 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
2977 QC1-QC12 R10 R11 R19-R22;
2978 WITH DIFSC9;
2979
2980 PROC CORR DATA=DDIFC10 NOSIMPLE;
2981 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
2982 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
2983 QC1-QC12 R10 R11 R19-R22;
2984 WITH DIFSC10;
2985
2986 PROC CORR DATA=DDIFC11 NOSIMPLE;
2987 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
2988 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
2989 QC1-QC12 R10 R11 R19-R22;
2990 WITH DIFSC11;
2991
2992
2993 PROC CORR DATA=DDIFC12 NOSIMPLE;
2994 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
2995 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
2996 QC1-QC12 R10 R11 R19-R22;
2997 WITH DIFSC12;
```

```

2998
2999 PROC CORR DATA=DDIFC13 NOSIMPLE;
3000 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
3001 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
3002 QC1-QC12 R10 R11 R19-R22;
3003 WITH DIFSC13;
3004
3005 PROC CORR DATA=DDIFC14 NOSIMPLE;
3006 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
3007 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
3008 QC1-QC12 R10 R11 R19-R22;
3009 WITH DIFSC14;
3010 */
3011 *****REGRESSIONS WITH INDIVID DIFF SCORES
          STRONGLY EMPHD IN PAR;

3012 /*
3013 PROC REG DATA=DDIFC1;
3014 SDC1J7: MODEL DIFSC1 = J7;
3015 SDC1J9: MODEL DIFSC1 = J9;
3016 SDC1H11: MODEL DIFSC1 = H11;
3017 SDC1QC0: MODEL DIFSC1 = QC10;
3018
3019 PROC REG DATA=DDIFC2;
3020 SDC2J7: MODEL DIFSC2 = J7;
3021 SDC2J9: MODEL DIFSC2 = J9;
3022 SDC2H11: MODEL DIFSC2 = H11;
3023 SDC2QC0: MODEL DIFSC2 = QC10;
3024
3025 PROC REG DATA=DDIFC3;
3026 SDC3J7: MODEL DIFSC3 = J7;
3027 SDC3J9: MODEL DIFSC3 = J9;
3028 SDC3H11: MODEL DIFSC3 = H11;
3029 SDC3QC0: MODEL DIFSC3 = QC10;
3030
3031 PROC REG DATA=DDIFC4;
3032 SDC4J7: MODEL DIFSC4 = J7;
3033 SDC4J9: MODEL DIFSC4 = J9;
3034 SDC4H11: MODEL DIFSC4 = H11;
3035 SDC4QC0: MODEL DIFSC4 = QC10;
3036
3037 PROC REG DATA=DDIFC5;
3038 SDC5J7: MODEL DIFSC5 = J7;
3039 SDC5J9: MODEL DIFSC5 = J9;
3040 SDC5H11: MODEL DIFSC5 = H11;
3041 SDC5QC0: MODEL DIFSC5 = QC10;
3042
3043 PROC REG DATA=DDIFC6;
3044 SDC6J7: MODEL DIFSC6 = J7;
3045 SDC6J9: MODEL DIFSC6 = J9;
3046 SDC6H11: MODEL DIFSC6 = H11;
3047 SDC6QC0: MODEL DIFSC6 = QC10;
3048
3049 PROC REG DATA=DDIFC7;
3050 SDC7J7: MODEL DIFSC7 = J7;
3051 SDC7J9: MODEL DIFSC7 = J9;
3052 SDC7H11: MODEL DIFSC7 = H11;
3053 SDC7QC0: MODEL DIFSC7 = QC10;

```



```
3054
3055 PROC REG DATA=DDIFC8;
3056 SDC8J7: MODEL DIFSC8 = J7;
3057 SDC8J9: MODEL DIFSC8 = J9;
3058 SDC8H11: MODEL DIFSC8 = H11;
3059 SDC8QC0: MODEL DIFSC8 = QC10;
3060
3061 PROC REG DATA=DDIFC9;
3062 SDC9J7: MODEL DIFSC9 = J7;
3063 SDC9J9: MODEL DIFSC9 = J9;
3064 SDC9H11: MODEL DIFSC9 = H11;
3065 SDC9QC0: MODEL DIFSC9 = QC10;
3066
3067 PROC REG DATA=DDIFC10;
3068 SDC10J7: MODEL DIFSC10 = J7;
3069 SDC10J9: MODEL DIFSC10 = J9;
3070 SDC10H11: MODEL DIFSC10 = H11;
3071 SDC10QC0: MODEL DIFSC10 = QC10;
3072
3073 PROC REG DATA=DDIFC11;
3074 SDC11J7: MODEL DIFSC11 = J7;
3075 SDC11J9: MODEL DIFSC11 = J9;
3076 SDC11H11: MODEL DIFSC11 = H11;
3077 SDC11QC0: MODEL DIFSC11 = QC10;
3078
3079 PROC REG DATA=DDIFC12;
3080 SDC12J7: MODEL DIFSC12 = J7;
3081 SDC12J9: MODEL DIFSC12 = J9;
3082 SDC12H11: MODEL DIFSC12 = H11;
3083 SDC12QC0: MODEL DIFSC12 = QC10;
3084
3085 PROC REG DATA=DDIFC13;
3086 SDC13J7: MODEL DIFSC13 = J7;
3087 SDC13J9: MODEL DIFSC13 = J9;
3088 SDC13H11: MODEL DIFSC13 = H11;
3089 SDC13QC0: MODEL DIFSC13 = QC10;
3090
3091 PROC REG DATA=DDIFC14;
3092 SDC14J7: MODEL DIFSC14 = J7;
3093 SDC14J9: MODEL DIFSC14 = J9;
3094 SDC14H11: MODEL DIFSC14 = H11;
3095 SDC14QC0: MODEL DIFSC14 = QC10;
3096 */
3097 /*
3098 PROC REG DATA=TISHNEW2;
3099
3100 DIFB1J9: MODEL DIFB1 = J9 /TOL;
3101 DIFB1J10: MODEL DIFB1 = J10 /TOL;
3102 DIFB1J11: MODEL DIFB1 = J11 /TOL;
3103 DIFB1J12: MODEL DIFB1 = J12 /TOL;
3104
3105 DIFB2J9: MODEL DIFB2 = J9 /TOL;
3106 DIFB2J10: MODEL DIFB2 = J10 /TOL;
3107 DIFB2J11: MODEL DIFB2 = J11 /TOL;
3108 DIFB2J12: MODEL DIFB2 = J12 /TOL;
3109
3110 DIFB3J9: MODEL DIFB3 = J9 /TOL;
```

3111 DIFB3J10: MODEL DIFB3 = J10 /TOL;
3112 DIFB3J11: MODEL DIFB3 = J11 /TOL;
3113 DIFB3J12: MODEL DIFB3 = J12 /TOL;
3114
3115 DIFB4J9: MODEL DIFB1 = J9 /TOL;
3116 DIFB4J10: MODEL DIFB1 = J10 /TOL;
3117 DIFB4J11: MODEL DIFB1 = J11 /TOL;
3118 DIFB4J12: MODEL DIFB1 = J12 /TOL;
3119
3120 DIFB5J9: MODEL DIFB5 = J9 /TOL;
3121 DIFB5J10: MODEL DIFB5 = J10 /TOL;
3122 DIFB5J11: MODEL DIFB5 = J11 /TOL;
3123 DIFB5J12: MODEL DIFB5 = J12 /TOL;
3124
3125 DIFB6J9: MODEL DIFB6 = J9 /TOL;
3126 DIFB6J10: MODEL DIFB6 = J10 /TOL;
3127 DIFB6J11: MODEL DIFB6 = J11 /TOL;
3128 DIFB6J12: MODEL DIFB6 = J12 /TOL;
3129
3130 DIFB6J9: MODEL DIFB6 = J9 /TOL;
3131 DIFB6J10: MODEL DIFB6 = J10 /TOL;
3132 DIFB6J11: MODEL DIFB6 = J11 /TOL;
3133 DIFB6J12: MODEL DIFB6 = J12 /TOL;
3134
3135 DIFB7J9: MODEL DIFB7 = J9 /TOL;
3136 DIFB7J10: MODEL DIFB7 = J10 /TOL;
3137 DIFB7J11: MODEL DIFB7 = J11 /TOL;
3138 DIFB7J12: MODEL DIFB7 = J12 /TOL;
3139
3140 DIFB8J9: MODEL DIFB8 = J9 /TOL;
3141 DIFB8J10: MODEL DIFB8 = J10 /TOL;
3142 DIFB8J11: MODEL DIFB8 = J11 /TOL;
3143 DIFB8J12: MODEL DIFB8 = J12 /TOL;
3144
3145 DIFC1J9: MODEL DIFC1 = J9 /TOL;
3146 DIFC1J10: MODEL DIFC1 = J10 /TOL;
3147 DIFC1J11: MODEL DIFC1 = J11 /TOL;
3148 DIFC1J12: MODEL DIFC1 = J12 /TOL;
3149
3150 DIFC2J9: MODEL DIFC2 = J9 /TOL;
3151 DIFC2J10: MODEL DIFC2 = J10 /TOL;
3152 DIFC2J11: MODEL DIFC2 = J11 /TOL;
3153 DIFC2J12: MODEL DIFC2 = J12 /TOL;
3154
3155 DIFC3J9: MODEL DIFC3 = J9 /TOL;
3156 DIFC3J10: MODEL DIFC3 = J10 /TOL;
3157 DIFC3J11: MODEL DIFC3 = J11 /TOL;
3158 DIFC3J12: MODEL DIFC3 = J12 /TOL;
3159
3160 DIFC4J9: MODEL DIFC1 = J9 /TOL;
3161 DIFC4J10: MODEL DIFC1 = J10 /TOL;
3162 DIFC4J11: MODEL DIFC1 = J11 /TOL;
3163 DIFC4J12: MODEL DIFC1 = J12 /TOL;
3164
3165 DIFC5J9: MODEL DIFC5 = J9 /TOL;
3166 DIFC5J10: MODEL DIFC5 = J10 /TOL;
3167 DIFC5J11: MODEL DIFC5 = J11 /TOL;

3168 DIFC5J12: MODEL DIFC5 = J12 /TOL;
 3169
 3170 DIFC6J9: MODEL DIFC6 = J9 /TOL;
 3171 DIFC6J10: MODEL DIFC6 = J10 /TOL;
 3172 DIFC6J11: MODEL DIFC6 = J11 /TOL;
 3173 DIFC6J12: MODEL DIFC6 = J12 /TOL;
 3174
 3175 DIFC6J9: MODEL DIFC6 = J9 /TOL;
 3176 DIFC6J10: MODEL DIFC6 = J10 /TOL;
 3177 DIFC6J11: MODEL DIFC6 = J11 /TOL;
 3178 DIFC6J12: MODEL DIFC6 = J12 /TOL;
 3179
 3180 DIFC7J9: MODEL DIFC7 = J9 /TOL;
 3181 DIFC7J10: MODEL DIFC7 = J10 /TOL;
 3182 DIFC7J11: MODEL DIFC7 = J11 /TOL;
 3183 DIFC7J12: MODEL DIFC7 = J12 /TOL;
 3184
 3185 DIFC8J9: MODEL DIFC8 = J9 /TOL;
 3186 DIFC8J10: MODEL DIFC8 = J10 /TOL;
 3187 DIFC8J11: MODEL DIFC8 = J11 /TOL;
 3188 DIFC8J12: MODEL DIFC8 = J12 /TOL;
 3189
 3190 DIFC9J9: MODEL DIFC9 = J9 /TOL;
 3191 DIFC9J10: MODEL DIFC9 = J10 /TOL;
 3192 DIFC9J11: MODEL DIFC9 = J11 /TOL;
 3193 DIFC9J12: MODEL DIFC9 = J12 /TOL;
 3194
 3195 DIFC10J9: MODEL DIFC10 = J9 /TOL;
 3196 DIFC10J0: MODEL DIFC10 = J10 /TOL;
 3197 DIFC10J1: MODEL DIFC10 = J11 /TOL;
 3198 DIFC10J2: MODEL DIFC10 = J12 /TOL;
 3199
 3200 DIFC11J9: MODEL DIFC11 = J9 /TOL;
 3201 DIFC11J0: MODEL DIFC11 = J10 /TOL;
 3202 DIFC11J1: MODEL DIFC11 = J11 /TOL;
 3203 DIFC11J2: MODEL DIFC11 = J12 /TOL;
 3204
 3205 DIFC12J9: MODEL DIFC12 = J9 /TOL;
 3206 DIFC12J0: MODEL DIFC12 = J10 /TOL;
 3207 DIFC12J1: MODEL DIFC12 = J11 /TOL;
 3208 DIFC12J2: MODEL DIFC12 = J12 /TOL;
 3209
 3210 DIFC13J9: MODEL DIFC13 = J9 /TOL;
 3211 DIFC13J0: MODEL DIFC13 = J10 /TOL;
 3212 DIFC13J1: MODEL DIFC13 = J11 /TOL;
 3213 DIFC13J2: MODEL DIFC13 = J12 /TOL;
 3214
 3215 DIFC14J9: MODEL DIFC14 = J9 /TOL;
 3216 DIFC14J0: MODEL DIFC14 = J10 /TOL;
 3217 DIFC14J1: MODEL DIFC14 = J11 /TOL;
 3218 DIFC14J2: MODEL DIFC14 = J12 /TOL;
 3219 */

3220

3221

3222 *-----*

3223 12. CREATING COMPOSITES OF RECRUITING PRACTICES
 3224 USING PRINCIPLE COMPONENTS ANALYSIS

```

3225 *-----*;
3226
3227 *****
3228 -Check the composites for variability (standard deviation)
3229 using Proc Univariate.
3230
3231 -With PROC PRINT, you must always specify dataset and
3232 variables to be printed, otherwise everything and the
3233 kitchen sink will end up on your million page printout.
3234 *****;
3235
3236
3237 /*
3238 PROC PRINCOMP N=5 DATA=TISHNEW1 PREFIX=PBA OUT=PBA;
3239   VAR BA1-BA15;
3240 PROC PRINT DATA=PBA;
3241   VAR IDNUM PBA1 PBA2 PBA3;
3242 PROC UNIVARIATE PLOT NORMAL DATA=PBA;
3243   VAR PBA1 PBA2 PBA3;
3244
3245 PROC PRINCOMP N=5 DATA=TISHNEW1 PREFIX=PBJ OUT=PBJ;
3246   VAR BJ1-BJ15;
3247 PROC PRINT DATA=PBJ;
3248   VAR IDNUM PBJ1 PBJ2 PBJ3;
3249 PROC UNIVARIATE PLOT NORMAL DATA=PBJ;
3250   VAR PBJ1 PBJ2 PBJ3;
3251
3252 */
3253 *****
3254   PCA ROUND 2: PBA2 PBJ2
3255 *****;
3256
3257 /*
3258 PROC PRINCOMP N=5 DATA=TISHNEW1 PREFIX=P2BA OUT=PBA2;
3259   VAR BA10-BA15;
3260 PROC PRINT DATA=PBA2;
3261   VAR IDNUM P2BA1 P2BA2 P2BA3;
3262 PROC UNIVARIATE PLOT NORMAL DATA=PBA2;
3263   VAR P2BA1 P2BA2 P2BA3;
3264
3265 PROC PRINCOMP N=5 DATA=TISHNEW1 PREFIX=P2BJ OUT=PBJ2;
3266   VAR BJ10-BJ15;
3267 PROC PRINT DATA=PBJ2;
3268   VAR IDNUM P2BJ1 P2BJ2 P2BJ3;
3269 PROC UNIVARIATE PLOT NORMAL DATA=PBJ2;
3270   VAR P2BJ1 P2BJ2 P2BJ3;
3271 */
3272 /*
3273
3274 PROC PRINCOMP N=5 DATA=TISHNEW1 PREFIX=SELECBA OUT=PBA3;
3275   VAR BA11 BA13-BA15;
3276 PROC PRINT DATA=PBA3;
3277   VAR IDNUM SELECBA1 SELECBA2;
3278 PROC UNIVARIATE PLOT NORMAL FREQ DATA=PBA3;
3279   VAR SELECBA1 SELECBA2;
3280 PROC PLOT DATA=PBA3;
3281   PLOT SELECBA1*SELECBA2;

```

```

3282
3283 PROC PRINCOMP N=5 DATA=PBA3 PREFIX=SELECBJ OUT=PBJ3;
3284 VAR BJ11 BJ13-BJ15;
3285 PROC PRINT DATA=PBJ3;
3286 VAR IDNUM SELECBJ1 SELECBJ2;
3287 PROC UNIVARIATE PLOT NORMAL FREQ DATA=PBJ3;
3288 VAR SELECBJ1 SELECBJ2;
3289 PROC PLOT DATA=PBJ3;
3290 PLOT SELECBJ1*SELECBJ2;
3291
3292 PROC PRINCOMP N=5 DATA=TISHNEW1 PREFIX=SELECBA OUT=PBA3;
3293 VAR BA13-BA15;
3294 PROC PRINT DATA=PBA3;
3295 VAR IDNUM SELECBA1 SELECBA2;
3296 PROC UNIVARIATE PLOT NORMAL FREQ DATA=PBA3;
3297 VAR SELECBA1 SELECBA2;
3298 PROC PLOT DATA=PBA3;
3299 PLOT SELECBA1*SELECBA2;
3300
3301 PROC PRINCOMP N=5 DATA=PBA3 PREFIX=SELECBJ OUT=PBJ3;
3302 VAR BJ13-BJ15;
3303 PROC PRINT DATA=PBJ3;
3304 VAR IDNUM SELECBJ1 SELECBJ2;
3305 PROC UNIVARIATE PLOT NORMAL FREQ DATA=PBJ3;
3306 VAR SELECBJ1 SELECBJ2;
3307 PROC PLOT DATA=PBJ3;
3308 PLOT SELECBJ1*SELECBJ2;
3309
3310
3311 PROC PRINCOMP N=5 DATA=TISHNEW1 PREFIX=SELECBA OUT=PBA3;
3312 VAR BA13-BA15;
3313
3314 PROC PRINCOMP N=5 DATA=PBA3 PREFIX=SELECBJ OUT=PBJ3;
3315 VAR BJ13-BJ15;
3316
3317 */
3318
3319 *-----*
3320 DIFFERENCES BETWEEN RECRUITMENT COMPOSITES
3321 *-----*;
3322 *****
3323
3324 For Transformations, see OPERATORS
3325
3326 SAS Language, Version 6, p. 122
3327 One asterisk for multiplication
3328 Two asterisks for exponential functions
3329 *****;
3330
3331 /*
3332
3333
3334
3335 PROC PRINT DATA=PBJ3; VAR IDNUM DCB1;
3336 PROC UNIVARIATE PLOT NORMAL FREQ DATA=PBJ3;
3337 VAR DCB1;
3338

```

```

3339
3340 PROC PRINT DATA=PBJ3; VAR IDNUM DCB2;
3341 PROC UNIVARIATE PLOT NORMAL FREQ DATA=PBJ3;
3342 VAR DCB2;
3343
3344
3345 PROC PRINT DATA=PBJ3; VAR IDNUM DCB3;
3346 PROC UNIVARIATE PLOT NORMAL FREQ DATA=PBJ3;
3347 VAR DCB3;
3348 */
3349
3350
3351 *****
3352 CREATING DCB
3353 *****;
3354 /*
3355 DATA PBJ3; SET PBJ3;
3356 DCB1 = SELECA1 - SELECAJ1;
3357 DCB = (1000)*(DCB1);
3358
3359
3360 PROC PRINT DATA=PBJ3;
3361 VAR IDNUM DCB DCB1;
3362 PROC UNIVARIATE PLOT NORMAL FREQ DATA=PBJ3;
3363 VAR DCB DCB1;
3364
3365 PROC CORR DATA=PBJ3 NOSIMPLE;
3366 VAR DCB;
3367 WITH J7 J8 J1 J2 J3 J9 J10;
3368
3369 PROC CORR DATA=PBJ3 NOSIMPLE;
3370 VAR J7 J8 J1 J2 J3 J9 J10;
3371 WITH DCB;
3372 */
3373
3374 *****
3375 RECRUITMENT
3376 HYPOTHESIS TESTING USING REGRESSION
3377 *****;
3378
3379
3380 *-----*
3381 PCA AND REGRESSION FOR HYPOTHESIS 1
3382 *-----*;
3383
3384 *****
3385 R PCA H1
3386 *****;
3387 /*
3388
3389 PROC PRINCOMP N=5 DATA=PBJ3 PREFIX=JCONT OUT=HDAT1A;
3390 VAR J9 J10;
3391
3392 PROC PRINCOMP N=5 DATA=HDAT1A PREFIX=JCLAR OUT=HDAT1B;
3393 VAR J1 J2 J3;
3394
3395 *****

```

```

3396           R DATA DISPLAY, CORRELATIONS H1
3397           *****;
3398
3399 PROC PRINT DATA=HDAT1A;
3400   VAR IDNUM JCONT1 JCONT2;
3401 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT1A;
3402   VAR JCONT1 JCONT2;
3403
3404 PROC PRINT DATA=HDAT1B;
3405   VAR IDNUM JCLAR1 JCLAR2;
3406 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT1B;
3407   VAR JCLAR1 JCLAR2;
3408
3409
3410           *****
3411           R DATA DISPLAY, CORRELATIONS H1
3412           *****;
3413
3414 PROC PRINT DATA=HDAT1B;
3415   VAR IDNUM JCONT1 JCLAR1 J7;
3416
3417 PROC CORR NOPROB DATA=HDAT1B;
3418   VAR DCB JCONT1 JCLAR1 J7 J8;
3419
3420 PROC CORR NOPROB DATA=HDAT1B;
3421   VAR DCB J7 J8 J1 J2 J3 J9 J10;
3422
3423           *****
3424           R OLS REGRESSION AND RESIDUAL PLOTS H1
3425           *****;
3426
3427 * TITLE 'HYPOTHESIS 1';
3428
3429 PROC REG DATA=HDAT1B;
3430
3431 H1M1: MODEL DCB = JCONT1/TOL;
3432 H1M2: MODEL DCB = JCLAR1 /TOL;
3433 H1M3: MODEL DCB = J7 /TOL;
3434 H1M4: MODEL DCB = J8 /TOL;
3435 H1M5: MODEL DCB = JCONT1 JCLAR1 /TOL;      TEST JCLAR1=0;
3436 H1M6: MODEL DCB = JCONT1 J7 /TOL;          TEST J7=0;
3437 H1M7: MODEL DCB = JCONT1 J8 /TOL;          TEST J8=0;
3438 H1M8: MODEL DCB = JCLAR1 J7 /TOL;          TEST JCLAR1=0;
3439 H1M9: MODEL DCB = JCLAR1 J8 /TOL;          TEST JCLAR1=0;
3440 H1M10: MODEL DCB = J7 J8 /TOL;             TEST J8=0;
3441 H1M11: MODEL DCB = JCONT1 JCLAR1 J7 /TOL;  TEST JCLAR1=0, J7=0;
3442 H1M12: MODEL DCB = JCONT1 JCLAR1 J8 /TOL;  TEST JCLAR1=0, J8=0;
3443 H1M13: MODEL DCB = JCONT1 J7 J8 /TOL;      TEST J7=0, J8=0;
3444 H1M14: MODEL DCB = JCLAR1 J7 J8 /TOL;      TEST J7=0, J8=0;
3445 H1M15: MODEL DCB = JCONT1 JCLAR1 J7 J8 /TOL;
3446   TEST JCLAR1=0, J7=0, J8=0;
3447
3448
3449           *****
3450           R CHECKING THE FINAL MODEL IN H1
3451           *****;
3452

```

```

3453 PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
3454 OUTPUT OUT=HDAT1B COOKD=COOKD RSTUDENT=DELRES H=HAT;
3455 PROC UNIVARIATE PLOT NORMAL DATA=HDAT1B;
3456 VAR DELRES;
3457
3458 *****
3459 R SENSITIVITY ANALYSIS H1
3460 *****;
3461 *Identifying the atypical datapoints singled out by CookD;
3462
3463 DATA ATYP1; SET HDAT1B;
3464 IF COOKD>.10;
3465 PROC PRINT DATA=ATYP1;
3466 VAR DCB JCONT1 JCLAR1 J7 J8;
3467
3468 *Removing the atypical datapoint COOKD and refitting the
3469 final model;
3470
3471 DATA SENSTV1; SET HDAT1B;
3472 IF COOKD, .10;
3473 PROC REG DATA=SENSTV1;
3474 M** MODEL
3475
3476
3477 */
3478 *-----*
3479 R PCA AND REGRESSION FOR HYPOTHESIS 2
3480 *-----*;
3481 /* *****
3482 R DATA DISPLAY CORRELATIONS H2
3483 *****;
3484
3485 *TITLE 'HYPOTHESIS 2';
3486
3487 PROC PRINT DATA=PBJ3;
3488 VAR IDNUM QC10 QC11 QC12 QC13;
3489
3490 PROC CORR NOPROB DATA=PBJ3;
3491 VAR DCB QC10 QC11 QC12 QC13;
3492
3493 *****
3494 R OLS REGRESSION AND RESIDUAL PLOTS H2
3495 *****;
3496
3497 PROC REG DATA=PBJ3;
3498
3499 H2M1: MODEL DCB = QC10 /TOL;
3500 H2M2: MODEL DCB = QC11 /TOL;
3501 H2M3: MODEL DCB = QC12 /TOL;
3502 H2M4: MODEL DCB = QC13 /TOL;
3503 H2M5: MODEL DCB = QC10 QC11 /TOL; TEST QC11=0;
3504 H2M6: MODEL DCB = QC10 QC12 /TOL; TEST QC12=0;
3505 H2M7: MODEL DCB = QC10 QC13 /TOL; TEST QC13=0;
3506 H2M8: MODEL DCB = QC11 QC12 /TOL; TEST QC12=0;
3507 H2M9: MODEL DCB = QC11 QC13 /TOL; TEST QC13=0;
3508 H2M10: MODEL DCB = QC12 QC13 /TOL; TEST QC13=0;
3509 H2M11: MODEL DCB = QC10 QC11 QC12 /TOL; TEST QC11=0 QC12=0;

```



```

3510 H2M12: MODEL DCB = QC10 QC11 QC13 /TOL; TEST QC11=0 QC13=0;
3511 H2M13: MODEL DCB = QC11 QC12 QC13 /TOL; TEST QC12=0 QC13=0;
3512 H2M14: MODEL DCB = QC10 QC11 QC12 QC13 /TOL; TEST QC11=0 QC12=0 QC13=0;
3513
3514 *****
3515 R CHECKING THE FINAL MODEL IN H2
3516 *****;
3517
3518 DATA HDAT2A; SET PBJ3;
3519 PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
3520 OUTPUT OUT=HDAT2A COOKD=COOKD RSTUDENT=DELRES H=HAT;
3521 PROC UNIVARIATE PLOT NORMAL DATA=HDAT2A;
3522 VAR DELRES;
3523
3524 *****
3525 R SENSITIVITY ANALYSIS H2
3526 *****;
3527 *Identifying the atypical datapoints singled out by CookD;
3528
3529 DATA ATYP2; SET HDAT2A;
3530 IF COOKD>.10;
3531 PROC PRINT DATA=ATYP2;
3532 VAR DCB QC10 QC11 QC12 QC13;
3533
3534 *Removing the atypical datapoint COOKD and refitting the
3535 final model;
3536
3537 DATA SENSTV2; SET HDAT2A;
3538 IF COOKD,.10;
3539 PROC REG DATA=SENSTV2;
3540 M** MODEL
3541
3542
3543
3544 *-----*
3545 R PCA AND REGRESSION FOR HYPOTHESIS 3
3546 *-----*;
3547
3548
3549 PROC PRINCOMP N=5 DATA=PBJ3 PREFIX=W3A OUT=HDAT3A;
3550 VAR J11 J12 J13;
3551 PROC PRINT DATA=HDAT3A;
3552 VAR IDNUM W3A1 W3A2;
3553 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT3A;
3554 VAR W3A1 W3A2;
3555
3556 *****
3557 R DATA DISPLAY, CORRELATIONS H3
3558 *****;
3559
3560 PROC PRINT DATA=HDAT3A;
3561 VAR J11 J12 J13 W3A1 W3A2;
3562
3563 PROC CORR NOPROB DATA=HDAT3A;
3564 VAR DCB J11 J12 J13 W3A1 W3A2;
3565
3566 *****

```

```

3567           R  OLS REGRESSION AND RESIDUAL PLOTS H3
3568           *****;
3569
3570   *TITLE 'HYPOTHESIS 3';
3571
3572   PROC REG DATA=HDAT3A;
3573
3574   H3M1: MODEL DCB = W3A1;
3575   H3M2: MODEL DCB = N14;
3576   H3M3: MODEL DCB = H1;
3577   H3M4: MODEL DCB = W3A1 N14;      TEST N14=O;
3578   H3M5: MODEL DCB = W3A1 H1;      TEST H1=O;
3579   H3M6: MODEL DCB = N14 H1;      TEST H1=O;
3580   H3M7: MODEL DCB = W3A1 N14 H1;  TEST N14=O, H1=O;
3581   */
3582   /*
3583           *****
3584   R  CHECKING THE FINAL MODEL IN H3
3585   *****;
3586
3587   PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
3588   OUTPUT OUT=HDAT3A COOKD=COOKD RSTUDENT=DELRES H=HAT;
3589   PROC UNIVARIATE PLOT NORMAL DATA=HDAT3A;
3590   VAR DELRES;
3591
3592           *****
3593   R  SENSITIVITY ANALYSIS H3
3594   *****;
3595   *Identifying the atypical datapoints singled out by CookD;
3596
3597   DATA ATYP3; SET HDAT3A;
3598   IF COOKD>.10;
3599   PROC PRINT DATA=ATYP3;
3600   VAR DCB J11 J12 J13 W3A1 W3A2;
3601
3602   *Removing the atypical datapoint COOKD and refitting the
3603   final model;
3604
3605   DATA SENSTV3; SET HDAT3A;
3606   IF COOKD,.10;
3607   PROC REG DATA=SENSTV3;
3608   M** MODEL
3609   */
3610   *-----*
3611   R  PCA AND REGRESSION FOR HYPOTHESIS 4
3612   *-----*;
3613   /*
3614   PROC PRINCOMP N=5 DATA=PBJ3 PREFIX=W4A OUT=HDAT4A;
3615   VAR N3 N15;
3616   PROC PRINT DATA=HDAT4A;
3617   VAR IDNUM W4A1 W4A2;
3618   PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT4A;
3619   VAR W4A1 W4A2;
3620
3621
3622   PROC PRINCOMP N=5 DATA=HDAT4A PREFIX=W4B OUT=HDAT4B;
3623   VAR PJ1 PJ2 PJ3 PJ4 PJ5 PJ6 PJ7;

```

```

3624 PROC PRINT DATA=HDAT4B;
3625   VAR IDNUM W4B1 W4B2;
3626 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT4B;
3627   VAR W4B1 W4B2;
3628
3629
3630   *****
3631   R DATA DISPLAY H4
3632   *****;
3633
3634 PROC PRINT DATA=HDAT4B;
3635   VAR IDNUM W4A1 W4B1 H2;
3636
3637 PROC CORR NOPROB DATA=HDAT4B;
3638   VAR DCB W4A1 W4B1 H2;
3639   *****
3640   R OLS REGRESSION AND RESIDUAL PLOTS H4
3641   *****;
3642
3643 *TTITLE 'HYPOTHESIS 4';
3644
3645 PROC REG DATA=HDAT4B;
3646
3647 H4M1: MODEL DCB = W4A1;
3648 H4M2: MODEL DCB = H2;
3649 H4M3: MODEL DCB = W4B1;
3650 H4M4: MODEL DCB = W4A1 H2;   TEST H2=0;
3651 H4M5: MODEL DCB = W4A1 W4B1;   TEST W4B1=0;
3652 H4M6: MODEL DCB = W4B1 H2;   TEST H2=0;
3653 H4M7: MODEL DCB = W4A1 H2 W4B1;   TEST H2=0, W4B1=0;
3654
3655
3656   *****
3657   R CHECKING THE FINAL MODEL IN H4
3658   *****;
3659
3660 PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
3661   OUTPUT OUT=HDAT4B COOKD=COOKD RSTUDENT=DELRES H=HAT;
3662 PROC UNIVARIATE PLOT NORMAL DATA=HDAT4B;
3663   VAR DELRES;
3664
3665   *****
3666   R SENSITIVITY ANALYSIS H4
3667   *****;
3668   *Identifying the atypical datapoints singled out by CookD;
3669
3670 DATA ATYP4; SET HDAT4B;
3671   IF COOKD>.10;
3672 PROC PRINT DATA=ATYP4;
3673   VAR DCB W4A1 W4B1 H2;
3674
3675   *Removing the atypical datapoint COOKD and refitting the
3676   final model;
3677
3678 DATA SENSTV4; SET HDAT4B;
3679   IF COOKD<=.10;
3680 PROC REG DATA=SENSTV4;

```

```

3681 M** MODEL
3682 */
3683 *-----*
3684 R PCA FOR HYPOTHESIS 5
3685 *-----*;
3686 /*
3687 PROC PRINCOMP N=5 DATA=PBJ3 PREFIX=W5A OUT=HDAT5A;
3688 VAR R1 R3;
3689 PROC PRINT DATA=HDAT5A;
3690 VAR IDNUM W5A1 W5A2;
3691 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT5A;
3692 VAR W5A1 W5A2;
3693
3694
3695 PROC PRINCOMP N=5 DATA=HDAT5A PREFIX=W5B OUT=HDAT5B;
3696 VAR R2 R4;
3697 PROC PRINT DATA=HDAT5B;
3698 VAR IDNUM W5B1 W5B2;
3699 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT5B;
3700 VAR W5B1 W5B2;
3701
3702
3703 *****
3704 R DATA DISPLAY H5
3705 *****;
3706
3707 PROC PRINT DATA=HDAT5B;
3708 VAR IDNUM W5A1 W5B1;
3709
3710 PROC CORR NOPROB DATA=HDAT5B;
3711 VAR DCB R2 R4 W5A1 W5B1;
3712
3713 *****
3714 R OLS REGRESSION AND RESIDUAL PLOTS H5
3715 *****;
3716
3717 *TITLE 'HYPOTHESIS 5';
3718
3719 PROC REG DATA=HDAT5B;
3720
3721 H5M1: MODEL DCB = W5A1;
3722 H5M2: MODEL DCB = W5B1;
3723 H5M3: MODEL DCB = W5A1 W5B1; TEST W5B1=0;
3724
3725 *****
3726 R CHECKING THE FINAL MODEL IN H5
3727 *****;
3728
3729 PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
3730 OUTPUT OUT=HDAT5B COOKD=COOKD RSTUDENT=DELRES H=HAT;
3731 PROC UNIVARIATE PLOT NORMAL DATA=HDAT5B;
3732 VAR DELRES;
3733
3734 *****
3735 R SENSITIVITY ANALYSIS H5
3736 *****;
3737 *Identifying the atypical datapoints singled out by CookD;

```

```

3738
3739 DATA ATYP5; SET HDAT5B;
3740 IF COOKD>.10;
3741 PROC PRINT DATA=ATYP5;
3742 VAR DCB R2 R4 W5A1 W5B1;
3743
3744 *Removing the atypical datapoint COOKD and refitting the
3745 final model;
3746
3747 DATA SENSTV5; SET HDAT5B;
3748 IF COOKD,.10;
3749 PROC REG DATA=SENSTV5;
3750 M** MODEL
3751 */
3752 *-----*
3753 R PCA AND REGRESSION FOR HYPOTHESIS 6
3754 *-----*;
3755 /*
3756 PROC PRINCOMP N=5 DATA=PBJ3 PREFIX=W6A OUT=HDAT6A;
3757 VAR R5 R6;
3758 PROC PRINT DATA=HDAT6A;
3759 VAR IDNUM W6A1 W6A2;
3760 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT6A;
3761 VAR W6A1 W6A2;
3762
3763
3764 PROC PRINCOMP N=5 DATA=HDAT6A PREFIX=W6B OUT=HDAT6B;
3765 VAR H14 H15 H13;
3766 PROC PRINT DATA=HDAT6B;
3767 VAR IDNUM W6B1 W6B2;
3768 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT6B;
3769 VAR W6B1 W6B2;
3770
3771
3772 PROC PRINCOMP N=5 DATA=HDAT6B PREFIX=W6C OUT=HDAT6C;
3773 VAR H19 H18;
3774 PROC PRINT DATA=HDAT6C;
3775 VAR IDNUM W6C1 W6C2;
3776 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT6C;
3777 VAR W6C1 W6C2;
3778
3779
3780 *****
3781 R DATA DISPLAY H6
3782 *****;
3783
3784 PROC PRINT DATA=HDAT6C;
3785 VAR IDNUM W6A1 W6B1 W6C1;
3786
3787 PROC CORR NOPROB DATA=HDAT6C;
3788 VAR DCB H14 H15 H13 W6B1 W6B2;
3789
3790 *****
3791 R OLS REGRESSION AND RESIDUAL PLOTS H6
3792 *****;
3793
3794 *TITLE HYPOTHESIS 6;

```

```

3795
3796 PROC REG DATA=HDAT6C;
3797
3798 H6M1: MODEL DCB = W6A1;
3799 H6M2: MODEL DCB = W6B1;
3800 H6M3: MODEL DCB = W6C1;
3801 H6M4: MODEL DCB = W6A1 W6B1; TEST W6B1=0;
3802 H6M5: MODEL DCB = W6A1 W6C1; TEST W6C1=0;
3803 H6M6: MODEL DCB = W6B1 W6C1; TEST W6C1=0;
3804 H6M7: MODEL DCB = W6A1 W6B1 W6C1; TEST W6B1=0, W6C1=0;
3805
3806 *****
3807 R CHECKING THE FINAL MODEL IN H6
3808 *****;
3809
3810 PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
3811 OUTPUT OUT=HDAT6C COOKD=COOKD RSTUDENT=DELRES H=HAT;
3812 PROC UNIVARIATE PLOT NORMAL DATA=HDAT6C;
3813 VAR DELRES;
3814
3815 *****
3816 R SENSITIVITY ANALYSIS H6
3817 *****;
3818 *Identifying the atypical datapoints singled out by CookD;
3819
3820 DATA ATYP6; SET HDAT6C;
3821 IF COOKD>.10;
3822 PROC PRINT DATA=ATYP6;
3823 VAR DCB H14 H15 H13 W6B1 W6B2;
3824
3825 *Removing the atypical datapoint COOKD and refitting the
3826 final model;
3827
3828 DATA SENSTV6; SET HDAT6C;
3829 IF COOKD<=.10;
3830 PROC REG DATA=SENSTV6;
3831 M** MODEL
3832
3833 */
3834 *-----*
3835 R PCA AND REGRESSION FOR HYPOTHESIS 7
3836 *-----*;
3837 /*
3838 PROC PRINCOMP N=5 DATA=PBJ3 PREFIX=W7A OUT=HDAT7A;
3839 VAR N6 N4;
3840 PROC PRINT DATA=HDAT7A;
3841 VAR IDNUM W7A1 W7A2;
3842 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT7A;
3843 VAR W7A1 W7A2;
3844
3845
3846 PROC PRINCOMP N=5 DATA=HDAT7A PREFIX=W7B OUT=HDAT7B;
3847 VAR N7 N8 N5;
3848 PROC PRINT DATA=HDAT7B;
3849 VAR IDNUM W7B1 W7B2;
3850 PROC UNIVARIATE PLOT NOKMAL FREQ DATA=HDAT7B;
3851 VAR W7B1 W7B2;

```

```

3852
3853
3854 PROC PRINCOMP N=5 DATA=HDAT7B PREFIX=W7C OUT=HDAT7C:
3855   VAR R12 R14;
3856 PROC PRINT DATA=HDAT7C;
3857   VAR IDNUM W7C1 W7C2;
3858 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT7C;
3859   VAR W7C1 W7C2;
3860
3861
3862 PROC PRINCOMP N=5 DATA=HDAT7C PREFIX=W7D OUT=HDAT7D;
3863   VAR R10 R13 R15 R16 R19;
3864 PROC PRINT DATA=HDAT7D;
3865   VAR IDNUM W7D1 W7D2;
3866 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT7D;
3867   VAR W7D1 W7D2;
3868
3869
3870           *****
3871           R DATA DISPLAY H7
3872           *****;
3873
3874 PROC PRINT DATA=HDAT7D;
3875   VAR IDNUM W7A1 W7B1 W7C1 W7D1;
3876
3877 PROC CORR NOPROB DATA=HDAT7D;
3878   VAR N6 N4 N7 N8 N5 R12 R14 DCB;
3879   VAR DCB W7A1 W7B1 W7C1 W7D1;
3880           *****
3881           R OLS REGRESSION AND RESIDUAL PLOTS H7
3882           *****;
3883
3884 *TITLE 'HYPOTHESIS 7';
3885
3886 PROC REG DATA=HDAT7D;
3887
3888 H7M1: MODEL DCB = W7A1;
3889 H7M2: MODEL DCB = W7B1;
3890 H7M3: MODEL DCB = W7C1;
3891 H7M4: MODEL DCB = W7D1;
3892 H7M5: MODEL DCB = W7A1 W7B1;   TEST W7B1=0;
3893 H7M6: MODEL DCB = W7A1 W7C1;   TEST W7C1=0;
3894 H7M7: MODEL DCB = W7A1 W7D1;   TEST W7D1=0;
3895 H7M8: MODEL DCB = W7B1 W7C1;   TEST W7C1=0;
3896 H7M9: MODEL DCB = W7B1 W7D1;   TEST W7D1=0;
3897 H7M10: MODEL DCB = W7C1 W7D1;   TEST W7D1=0;
3898 H7M11: MODEL DCB = W7A1 W7B1 W7C1;   TEST W7B1=0, W7C1=0;
3899 H7M12: MODEL DCB = W7A1 W7B1 W7D1;   TEST W7B1=0, W7D1=0;
3900 H7M13: MODEL DCB = W7B1 W7C1 W7D1;   TEST W7C1=0, W7D1=0;
3901 H7M14: MODEL DCB = W7A1 W7B1 W7C1 W7D1;
3902   TEST W7B1=0, W7C1=0, W7D1=0;
3903
3904           *****
3905           R CHECKING THE FINAL MODEL IN H7
3906           *****;
3907
3908 PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';

```

```

3909         OUTPUT OUT=HDAT7D COOKD=COOKD RSTUDENT=DELRES H=HAT;
3910     PROC UNIVARIATE PLOT NORMAL DATA=HDAT7D;
3911         VAR DELRES;
3912
3913         *****
3914         R SENSITIVITY ANALYSIS H7
3915         *****;
3916     *Identifying the atypical datapoints singled out by CookD;
3917
3918     DATA ATYP7; SET HDAT7D;
3919         IF COOKD>.10;
3920     PROC PRINT DATA=ATYP7;
3921         VAR N6 N4 N7 N8 N5 R12 R14
3922         DCB W7A1 W7B1 W7C1 W7D1;
3923
3924     *Removing the atypical datapoint COOKD and refitting the
3925     final model;
3926
3927     DATA SENSTV7; SET HDAT7D;
3928         IF COOKD,.10;
3929     PROC REG DATA=SENSTV7;
3930         M** MODEL
3931     /*
3932     *-----*
3933         R PCA AND REGRESSION FOR HYPOTHESIS 8
3934     *-----*;
3935     /*
3936     PROC PRINCOMP N=5 DATA=PBJ3 PREFIX=W8A OUT=HDAT8A;
3937         VAR KP1 KP2 L1;
3938     PROC PRINT DATA=HDAT8A;
3939         VAR IDNUM W8A1 W8A2;
3940     PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT8A;
3941         VAR W8A1 W8A2;
3942
3943     PROC PRINCOMP N=5 DATA=HDAT8A PREFIX=W8B OUT=HDAT8B;
3944         VAR KP3 KP4 KP5 KP6 L4 L5;
3945     PROC PRINT DATA=HDAT8B;
3946         VAR IDNUM W8B1 W8B2;
3947     PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT8B;
3948         VAR W8B1 W8B2;
3949
3950     PROC PRINCOMP N=5 DATA=HDAT8B PREFIX=W8A OUT=HDAT8C;
3951         VAR KP7 KP8 KP9 KP10 KP11 KP12 KP13 L2 L6;
3952     PROC PRINT DATA=HDAT8C;
3953         VAR IDNUM W8C1 W8C2;
3954     PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT8C;
3955         VAR W8C1 W8C2;
3956
3957
3958
3959
3960         *****
3961         R DATA DISPLAY H8
3962         *****;
3963
3964     PROC PRINT DATA=HDAT8C;
3965         VAR IDNUM W8A1 W8B1 W8C1;

```



```

3966
3967 PROC CORR NOPROB DATA=HDAT8C;
3968   VAR DCB KP1 KP2 L1 KP3 KP4 KP5 KP6 L4 L5
3969 PROC CORR NOPROB DATA=HDAT8C;
3970   VAR DCB W8A1 W8B1 W8C1;
3971
3972   *****
3973   R OLS REGRESSION AND RESIDUAL PLOTS H8
3974   *****;
3975
3976 *TITLE 'HYPOTHESIS 8';
3977
3978 PROC REG DATA=HDAT8C;
3979
3980 H8M1: MODEL DCB = W8A1;
3981 H8M2: MODEL DCB = W8B1;
3982 H8M3: MODEL DCB = W8C1;
3983 H8M4: MODEL DCB = W8A1 W8B1;   TEST W8B1=0;
3984 H8M5: MODEL DCB = W8A1 W8C1;   TEST W8C1=0;
3985 H8M6: MODEL DCB = W8B1 W8C1;   TEST W8C1=0;
3986 H8M7: MODEL DCB = W8A1 W8B1 W8C1;   TEST W8B1=0, QW8C1=0;
3987
3988
3989   *****
3990   R CHECKING THE FINAL MODEL IN H8
3991   *****;
3992
3993   PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
3994   OUTPUT OUT=HDAT8C COOKD=COOKD RSTUDENT=DELRES H=HAT;
3995   PROC UNIVARIATE PLOT NORMAL DATA=HDAT8C;
3996   VAR DELRES;
3997
3998   *****
3999   R SENSITIVITY ANALYSIS H8
4000   *****;
4001   *Identifying the atypical datapoints singled out by CookD;
4002
4003 DATA ATYP8; SET HDAT8C;
4004   IF COOKD>.10;
4005 PROC PRINT DATA=ATYP8;
4006   VAR DCB W8A1 W8B1 W8C1;
4007
4008   *Removing the atypical datapoint COOKD and refitting the
4009   final model;
4010
4011 DATA SENSTV8; SET HDAT8C;
4012   IF COOKD,.10;
4013 PROC REG DATA=SENSTV8;
4014   M** MODEL
4015   */
4016   *-----*
4017   R PCA AND REGRESSION FOR HYPOTHESIS 9
4018   *-----*;
4019   /*
4020 PROC PRINCOMP N=5 DATA=PBJ3 PREFIX=W9A OUT=HDAT9A;
4021   VAR N12 H7 H8;
4022 PROC PRINT DATA=HDAT9A;

```

```

4023   VAR IDNUM W9A1 W9A2;
4024   PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT9A;
4025     VAR W9A1 W9A2;
4026
4027
4028
4029   PROC PRINCOMP N=5 DATA=HDAT9A PREFIX=W9B OUT=HDAT9B;
4030     VAR N13 H9 H10 H11 R21 R22 H12 H6;
4031   PROC PRINT DATA=HDAT9B;
4032     VAR IDNUM W9B1 W9B2;
4033   PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT9B;
4034     VAR W9B1 W9B2;
4035
4036
4037   PROC PRINCOMP N=5 DATA=HDAT9B PREFIX=W9C OUT=HDAT9C;
4038     VAR R19 R20;
4039   PROC PRINT DATA=HDAT9C;
4040     VAR IDNUM W9C1 W9C2;
4041   PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT9C;
4042     VAR W9C1 W9C2;
4043
4044
4045     *****
4046     R DATA DISPLAY H9
4047     *****;
4048
4049   PROC PRINT DATA=HDAT9C;
4050     VAR IDNUM W9A1 W9B1 W9C1;
4051
4052   PROC CORR NOPROB DATA=HDAT9C;
4053     VAR DCB N12 H7 H8 N13 H9 H10 H11 R21 R22 H12 H6 R19 R20;
4054   PROC CORR NOPROB DATA=HDAT9C;
4055     VAR DCB W9A1 W9B1 W9C1;
4056
4057     *****
4058     R OLS REGRESSION AND RESIDUAL PLOTS H9
4059     *****;
4060
4061   *TITLE 'HYPOTHESIS 9';
4062
4063   PROC REG DATA=HDAT9C;
4064
4065     H9M1: MODEL DCB = W9A1;
4066     H9M2: MODEL DCB = W9B1;
4067     H9M3: MODEL DCB = W9C1;
4068     H9M4: MODEL DCB = W9A1 W9B1;   TEST W9B1=0;
4069     H9M5: MODEL DCB = W9A1 W9C1;   TEST W9C1=0;
4070     H9M6: MODEL DCB = W9B1 W9C1;   TEST W9C1=0;
4071     H9M7: MODEL DCB = W9A1 W9B1 W9C1;   TEST W9B1=0, W9C1=0;
4072
4073     *****
4074     R CHECKING THE FINAL MODEL IN H9
4075     *****;
4076
4077   PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
4078     OUTPUT OUT=HDAT9C COOKD=COOKD RSTUDENT=DELRES H=HAT;
4079   PROC UNIVARIATE PLOT NORMAL DATA=HDAT9C;

```

```

4080         VAR DELRES;
4081
4082         *****
4083         R SENSITIVITY ANALYSIS H9
4084         *****;
4085         *Identifying the atypical datapoints singled out by CookD;
4086
4087         DATA ATYP9; SET HDAT9C;
4088             IF COOKD>.10;
4089         PROC PRINT DATA=ATYP9;
4090             VAR DCB W9A1 W9B1 W9C1;
4091
4092         *Removing the atypical datapoint COOKD and refitting the
4093             final model;
4094
4095         DATA SENSTV9; SET HDAT9C;
4096             IF COOKD<=.10;
4097         PROC REG DATA=SENSTV9;
4098             M** MODEL
4099         /*
4100
4101
4102         *****
4103         -----
4104             PERFORMANCE APPRAISAL
4105         -----
4106         *****;
4107
4108         *-----*
4109             PERFORMANCE APPRAISAL
4110             PCA COMPOSITES
4111         *-----*;
4112         /*
4113         PROC PRINCOMP N=3 DATA=TISHNEW1 PREFIX=PERFCA1 OUT=PCA1;
4114             VAR CA1 CA3 CA5-CA10;
4115         PROC PRINCOMP N=3 DATA=PCA1 PREFIX=PERFCJ1 OUT=PCJ1;
4116             VAR CJ1 CJ3 CJ5-CJ10;
4117
4118
4119         PROC PRINT DATA=PCA1;
4120             VAR IDNUM PERFCA11 PERFCA12;
4121         PROC UNIVARIATE PLOT NORMAL DATA=PCA1;
4122             VAR PERFCA11 PERFCA12;
4123
4124         PROC PRINT DATA=PCJ1;
4125             VAR IDNUM PERFCJ11 PERFCJ12;
4126         PROC UNIVARIATE PLOT NORMAL DATA=PCJ1;
4127             VAR PERFCJ11 PERFCJ12;
4128         /*
4129         *****
4130             PCA ROUND 2: PCA2 PCJ2
4131         *****;
4132         /*
4133         PROC PRINCOMP N=3 DATA=TISHNEW2.KEEP PREFIX=PERFCA2 OUT=PCA2;
4134             VAR CA1 CA3 CA5 CA7 CA8 CA9 CA10;
4135         PROC PRINCOMP N=3 DATA=PCA2 PREFIX=PERFCJ2 OUT=PCJ2;
4136             VAR CJ1 CJ3 CJ5 CJ7 CJ8 CJ9 CJ10;

```

```

4137
4138
4139 PROC PRINT DATA=PCA2;
4140   VAR IDNUM PERFCA21 PERFCA22;
4141 PROC UNIVARIATE PLOT NORMAL DATA=PCA2;
4142   VAR PERFCA21 PERFCA22;
4143
4144 PROC PRINT DATA=PCJ2;
4145   VAR IDNUM PERFCJ21 PERFCJ22;
4146 PROC UNIVARIATE PLOT NORMAL DATA=PCJ2;
4147   VAR PERFCJ21 PERFCJ22;
4148 */
4149 *****
4150   PCA ROUND 3: PCA3 PCJ3
4151 *****;
4152
4153 /*
4154 PROC PRINCOMP N=3 DATA=TISHNEW1 PREFIX=PERFCA3 OUT=PCA3;
4155   VAR CA1 CA7 CA8 CA12 CA13 CA14;
4156 PROC PRINCOMP N=3 DATA=PCA3 PREFIX=PERFCJ3 OUT=PCJ3;
4157   VAR CJ1 CJ7 CJ8 CJ12 CJ13 CJ14;
4158
4159
4160 PROC PRINT DATA=PCA3;
4161   VAR IDNUM PERFCA31 PERFCA32;
4162
4163 PROC UNIVARIATE PLOT NORMAL FREQ DATA=PCA3;
4164   VAR PERFCA31 PERFCA32;
4165 PROC PLOT DATA=PCA3;
4166   PLOT PERFCA31*PERFCA32;
4167
4168 PROC PRINT DATA=PCJ3;
4169   VAR IDNUM PERFCJ31 PERFCJ32;
4170 PROC UNIVARIATE PLOT NORMAL FREQ DATA=PCJ3;
4171   VAR PERFCJ31 PERFCJ32;
4172 PROC PLOT DATA=PCJ3;
4173   PLOT PERFCJ31*PERFCJ32;
4174 */
4175
4176 *-----*
4177   DIFFERENCES BETWEEN APPRAISAL COMPOSITES
4178 *-----*;
4179 *****
4180
4181   For Transformations, see OPERATORS
4182
4183   SAS Language, Version 6, p. 122
4184   One asterisk for multiplication
4185   Two asterisks for exponential functions
4186
4187 *****;
4188
4189 *****
4190
4191   CREATING DCC
4192   correlations var = col laLeI
4193   with = row labels

```

```

4194          *****;
4195      /*
4196      DATA PCJ2; SET PCJ2;
4197      DCC1 = PERFCA21- PERFCJ21;
4198      DCCT = (1000)*(DCC1);
4199      DCC = ABS(DCCT);
4200
4201
4202      PROC PRINT DATA=PCJ2;
4203          VAR IDNUM DCC DCC1;
4204      PROC UNIVARIATE PLOT NORMAL FREQ DATA=PCJ2;
4205          VAR DCC DCC1;
4206
4207      PROC CORR DATA=PCJ2 NOSIMPLE;
4208          VAR DCC;
4209          WITH J7 J8 J1 J2 J3 J9 J10;
4210      /*
4211      /*
4212      PROC CORR DATA=PCJ2;
4213          VAR DCC EMPPEES INDUST H18R;
4214      PROC CORR DATA=PCJ2;
4215          VAR DCC J1 J2 J8 J9 J10 J11 J12 J13 R19 R20;
4216      PROC CORR DATA=PCJ2;
4217          VAR DCC QC1 QC2 QC3 QC4 QC5 QC6 QC7 QC8 QC9 QC10 QC11 QC12 QC13;
4218      /*
4219
4220      *****
4221          PERFORMANCE APPRAISAL
4222          BLOCK HYPOTHESIS TESTING USING REGRESSION
4223      *****;
4224      /*
4225      ROUND 1 within each block.
4226          Single regressions, regressing DCC on single predictors
4227          Select out significant regressions (F>2, p<.10)
4228
4229      ROUND 2 within each block.
4230          Regress DCC on 2 predictors
4231          First predictor in all models in that block/round
4232              is predictor with highest f and r2 from Round 1
4233          Second predictor are significant variables from Round 1
4234              in order of significance (Ranked by F value)
4235          Increment to R2: Test second predictor = zero.
4236
4237      ROUND 3 within each block.
4238          Regress DCC on three predictors.
4239          First and second predictors in all models in that block/round
4240              is model from Round 2 with highest Test F
4241              (lowest Test p value)
4242          Increment to R2 Test:
4243              When second predictor tested signif. in Round 2
4244                  Test third predictor = 0
4245              When no second predictors tested signif. (p<.15)
4246                  in Round 2
4247                  Test second and third predictor =0.
4248
4249
4250      PROC PRINCOMP N=3 DATA=TISHNEW1 PREFIX=QCCOMP OUT=PCAR1;

```

```
4251   VAR QC10 QC11 QC12 QC13;
4252
4253   DATA PCJ2; SET TISHNEW2 PCJ2;
4254
4255   *BLOCK 1 CONTROL VARIABLES;
4256       *Significant Vars F>2 p<.15: J7;
4257
4258   PROC REG DATA=PCJ2;
4259
4260   B1M1: MODEL DCC = EMPEES;
4261   B1M2: MODEL DCC = INDUST;
4262   B1M3: MODEL DCC = H18R;
4263   B1M4: MODEL DCC = J1;
4264   B1M5: MODEL DCC = J2;
4265   B1M6: MODEL DCC = J7;
4266   B1M7: MODEL DCC = J8;
4267   /*
4268
4269   *BLOCK 2 PARENTAL CONTROL THRU RULES AND MEANS;
4270       *SIGNIFICANT Vars F>2: ASTRAT2;
4271       *B22M4: MODEL DCC = J13 R19, TEST F 1.73 P .197;
4272       *BEST MODEL: B2M8: DCC = J13, F 5.809 P.0213 R2 .1423;
4273   /*
4274   PROC REG DATA=PCJ2;
4275
4276   B2M1: MODEL DCC = J1;
4277   B2M2: MODEL DCC = J2;
4278   B2M3: MODEL DCC = J8;
4279   B2M4: MODEL DCC = J9;
4280   B2M5: MODEL DCC = J10;
4281   B2M6: MODEL DCC = J11;
4282   B2M7: MODEL DCC = J12;
4283   B2M8: MODEL DCC = J13;
4284   B2M9: MODEL DCC = J5;
4285   B2M10: MODEL DCC = J6;
4286   B2M11: MODEL DCC = ASTRAT2;
4287   /*
4288   *BLOCK 3 CONTROL BY ENDS/GOALS;
4289       *Significant Vars F>2: QC11, QC13, QC12, QC10;
4290       *B32M4: MODEL DCC = QC11 ASTRAT2, TEST F 6.26 P .017;
4291       *B33M2: MODEL DCC = QC11 ASTRAT2 QC12, TEST F .059 P .8;
4292       *BEST MODEL: B32M4: DCC = QC11 ASTRAT2, F 9.8 P .0004 R2 .3657;
4293   /*
4294   PROC REG DATA=PCJ2;
4295
4296   B3M1: MODEL DCC = QC1;
4297   B3M2: MODEL DCC = QC2;
4298   B3M3: MODEL DCC = QC3;
4299   B3M4: MODEL DCC = QC4;
4300   B3M5: MODEL DCC = QC5;
4301   B3M6: MODEL DCC = QC6;
4302   B3M7: MODEL DCC = QC7;
4303   B3M8: MODEL DCC = QC8;
4304   B3M9: MODEL DCC = QC9;
4305   B3M10: MODEL DCC = QC10;
4306   B3M11: MODEL DCC = QC11;
4307   B3M12: MODEL DCC = QC12;
```

```

4308 B3M13: MODEL DCC = QC13;
4309 B3M14: MODEL DCC = ASTRAT1;
4310 B3M15: MODEL DCC = ASTRAT3;
4311 B3M16: MODEL DCC = ASTRAT5;
4312
4313 B32M1: MODEL DCC = QC11 QC13 /TOL; TEST QC13 = 0;
4314 B32M2: MODEL DCC = QC11 QC12 /TOL; TEST QC12 = 0;
4315 B32M3: MODEL DCC = QC11 QC10 /TOL; TEST QC10 = 0;
4316 */
4317
4318
4319 *BLOCK 4 MIMETIC TO PARENT;
4320     *Significant Vars F>2: R9, R10;
4321     *B42M2: MODEL DCC = ;
4322     *B43M1: MODEL DCC = ;
4323     *BEST MODEL: B42M2: DCC = KP2 R19, F 3.088 P .059 R2 .1577;
4324 /*
4325 PROC REG DATA=PCJ2,
4326
4327 B4M1: MODEL DCC = KP1;
4328 B4M2: MODEL DCC = KH1;
4329 B4M3: MODEL DCC = KP2;
4330 B4M4: MODEL DCC = KH2;
4331 B4M5: MODEL DCC = R9;
4332 B4M6: MODEL DCC = R10;
4333 B4M7: MODEL DCC = R11;
4334 B4M8: MODEL DCC = R19;
4335 B4M9: MODEL DCC = R20;
4336 */
4337
4338 *BLOCK 5 NORMATIVE SOCIALIZATION;
4339     *Significant Vars F>2: H11;
4340     *BEST MODEL: B52M2: DCC = H11 R21, F 4.625 P.0167 R2 .2139;
4341 /*
4342 PROC REG DATA=PCJ2;
4343
4344 B5M1: MODEL DCC = N12;
4345 B5M2: MODEL DCC = N13;
4346 B5M3: MODEL DCC = R21;
4347 B5M4: MODEL DCC = R22;
4348 B5M5: MODEL DCC = H4;
4349 B5M6: MODEL DCC = H7;
4350 B5M7: MODEL DCC = H8;
4351 B5M8: MODEL DCC = H9;
4352 B5M9: MODEL DCC = H10;
4353 B5M10: MODEL DCC = H11;
4354 */
4355
4356 *BLOCK 6 CONTROL THRU STRUCTURE AND TASK INTERDEPEND;
4357     *Significant Vars F>2: ;
4358     *B62M2: MODEL DCC = ;
4359 /*
4360 PROC REG DATA=PCJ2;
4361
4362 B6M1: MODEL DCC = N3;
4363 B6M2: MODEL DCC = H2;
4364 B6M3: MODEL DCC = H1;

```

```
4365 B6M4: MODEL DCC = N15R;
4366 B6M5: MODEL DCC = DIFPUJ1;
4367 B6M6: MODEL DCC = DIFPUJ2;
4368 B6M7: MODEL DCC = DIFPUJ3;
4369 B6M8: MODEL DCC = DIFPUJ4;
4370 B6M9: MODEL DCC = DIFPUJ5;
4371 B6M10: MODEL DCC = DIFPUJ6;
4372 B6M11: MODEL DCC = DIFPUJ7;
4373 B6M12: MODEL DCC = H13;
4374 B6M13: MODEL DCC = H14;
4375 B6M14: MODEL DCC = H15;
4376 B6M15: MODEL DCC = ASTRAT3;
4377 B6M16: MODEL DCC = ASTRAT4;
4378 */
4379 *****BLOCK 7 COMBINATIONS;
4380 **7***ROUND 1;
4381 /*
4382 PROC REG DATA=PCJ2;
4383
4384 B7M1: MODEL DCC = QC11 QC13 QC12 QC10 ASTRAT2 /TOL;
4385 TEST ASTRAT2 = 0;
4386 B7M2: MODEL DCC = QC11 QC13 QC12 QC10 H11 /TOL;
4387 TEST H11 = 0;
4388 B7M3: MODEL DCC = QC11 QC13 QC12 QC10 R10 /TOL;
4389 TEST R10 = 0;
4390 B7M4: MODEL DCC = QC11 QC13 QC12 QC10 J7 /TOL;
4391 TEST J7 = 0;
4392
4393 **7***ROUND 2;
4394 B72M1: MODEL DCC = QC11 QC13 QC12 QC10 R10 ASTRAT2 /TOL;
4395 TEST ASTRAT2 = 0;
4396 B72M2: MODEL DCC = QC11 QC13 QC12 QC10 R10 H11 /TOL;
4397 TEST H11 = 0;
4398 B72M3: MODEL DCC = QC11 QC13 QC12 QC10 R10 J7 /TOL;
4399 TEST J7 = 0;
4400
4401 **7***ROUND 3;
4402
4403 B73M1: MODEL DCC = QC11 QC13 QC12 QC10 R10 ASTRAT2 H11 /TOL;
4404 TEST H11 = 0;
4405 B73M2: MODEL DCC = QC11 QC13 QC12 QC10 R10 ASTRAT2 J7 /TOL;
4406 TEST J7 = 0;
4407
4408 **7***ROUND 4;
4409 B74M1: MODEL DCC = QC11 QC13 QC12 QC10 R10 ASTRAT2 J7 H11 /TOL;
4410 TEST H11 = 0;
4411 B73M2: MODEL DCC = QC11 QC13 QC12 QC10 R10 ASTRAT2 H11 J7 /TOL;
4412 TEST J7 = 0;
4413 *****BEST COMBINED MODEL:
4414 B72M1: DCC = QC11 QC13 QC12 QC10 R10 ASTRAT2;
4415 * F 3.729 P.0069 R2 .427, TEST ASTRAT2 F 2.0769 P.1599;
4416
4417
4418 PROC REG DATA=PCJ2;
4419
4420 B8M1: MODEL DCC = QCIND1;
4421
```



```

4422 B82M1: MODEL DCC = QCIND1 H11 /TOL; TEST H11 = 0;
4423 B82M2: MODEL DCC = QCIND1 J7 /TOL; TEST J7 = 0;
4424 B82M3: MODEL DCC = QCIND1 ASTRAT2 /TOL; TEST ASTRAT2 = 0;
4425 B82M4: MODEL DCC = QCIND1 R10 /TOL; TEST R10 = 0;
4426 */
4427 *-----*
4428 PCA AND REGRESSION FOR HYPOTHESIS ASSUMPTIONS
4429 *-----*;
4430
4431 /*
4432 *****
4433 PCA HA
4434 *****;
4435
4436 PROC PRINCOMP N=5 DATA=PHDAT1A PREFIX=JCLAR OUT=PHDAT1B;
4437 VAR J1 J2 J3;
4438
4439 *****
4440 DATA DISPLAY, CORRELATIONS H1
4441 *****;
4442
4443 PROC PRINT DATA=PHDAT1B;
4444 VAR IDNUM JCLAR1 JCLAR2;
4445 PROC UNIVARIATE PLOT NORMAL FREQ DATA=PHDAT1B;
4446 VAR JCLAR1 JCLAR2;
4447
4448 */
4449 *-----*
4450 PCA AND REGRESSION FOR HYPOTHESIS 1
4451 *-----*;
4452
4453 *****
4454 PCA H1
4455 *****;
4456 /*
4457
4458 PROC PRINCOMP N=5 DATA=PCJ3 PREFIX=JCONT OUT=PHDAT1A;
4459 VAR J9 J10;
4460
4461 *****
4462 DATA DISPLAY, CORRELATIONS H1
4463 *****;
4464
4465 PROC PRINT DATA=PHDAT1A;
4466 VAR IDNUM JCONT1 JCONT2;
4467 PROC UNIVARIATE PLOT NORMAL FREQ DATA=PHDAT1A;
4468 VAR JCONT1;
4469
4470
4471 PROC PRINT DATA=PHDAT1A;
4472 VAR IDNUM JCONT1 DCC J9 J10;
4473
4474 PROC CORR NOPROB DATA=PHDAT1A;
4475 VAR DCC JCONT1 J9 J10;
4476 */
4477 *****
4478 OLS REGRESSION AND RESIDUAL PLOTS H1

```

```

4479          *****;
4480 /*
4481 TITLE 'PERFORMANCE APPRAISAL HYPOTHESIS 1';
4482
4483 PROC REG DATA=PCJ2;
4484
4485 PH1M1: MODEL DCC = J9 /TOL;
4486 PH1M2: MODEL DCC = J10 /TOL;
4487 PH1M3: MODEL DCC = J9 J10 /TOL; TEST J10=0;
4488
4489 H1M1: MODEL DCB = JCONT1/TOL;
4490 H1M2: MODEL DCB = JCLAR1 /TOL;
4491 H1M3: MODEL DCB = J7 /TOL;
4492 H1M4: MODEL DCB = J8 /TOL;
4493 H1M5: MODEL DCB = JCONT1 JCLAR1 /TOL;      TEST JCLAR1=0;
4494 H1M6: MODEL DCB = JCONT1 J7 /TOL;      TEST J7=0;
4495 H1M7: MODEL DCB = JCONT1 J8 /TOL;      TEST J8=0;
4496 H1M8: MODEL DCB = JCLAR1 J7 /TOL;      TEST JCLAR1=0;
4497 H1M9: MODEL DCB = JCLAR1 J8 /TOL;      TEST JCLAR1=0;
4498 H1M10: MODEL DCB = J7 J8 /TOL;      TEST J8=0;
4499 H1M11: MODEL DCB = JCONT1 JCLAR1 J7 /TOL;  TEST JCLAR1=0, J7=0;
4500 H1M12: MODEL DCB = JCONT1 JCLAR1 J8 /TOL;  TEST JCLAR1=0, J8=0;
4501 H1M13: MODEL DCB = JCONT1 J7 J8 /TOL;      TEST J7=0, J8=0;
4502 H1M14: MODEL DCB = JCLAR1 J7 J8 /TOL;      TEST J7=0, J8=0;
4503 H1M15: MODEL DCB = JCONT1 JCLAR1 J7 J8 /TOL;
4504 TEST JCLAR1=0, J7=0, J8=0;
4505
4506
4507          *****
4508          CHECKING THE FINAL MODEL IN H1
4509          *****;
4510
4511 PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
4512 OUTPUT OUT=HDAT1B COOKD=COOKD RSTUDENT=DELRES H=HAT;
4513 PROC UNIVARIATE PLOT NORMAL DATA=HDAT1B;
4514 VAR DELRES;
4515
4516          *****
4517          SENSITIVITY ANALYSIS H1
4518          *****;
4519          *Identifying the atypical datapoints singled out by CookD;
4520
4521 DATA ATYP1; SET HDAT1B;
4522 IF COOKD>.10;
4523 PROC PRINT DATA=ATYP1;
4524 VAR DCB JCONT1 JCLAR1 J7 J8;
4525
4526          *Removing the atypical datapoint COOKD and refitting the
4527          final model;
4528
4529 DATA SENSTV1; SET HDAT1B;
4530 IF COOKD<=.10;
4531 PROC REG DATA=SENSTV1;
4532 M** MODEL
4533
4534
4535 */

```

```

4536 *-----*
4537 PCA AND REGRESSION FOR HYPOTHESIS 2
4538 *-----*
4539 /* *****
4540 DATA DISPLAY, CORRELATIONS H2
4541 *****;
4542
4543 *TITLE 'HYPOTHESIS 2';
4544
4545 PROC PRINT DATA=PBJ3;
4546 VAR IDNUM QC10 QC11 QC12 QC13;
4547
4548 PROC CORR NOPROB DATA=PBJ3;
4549 VAR DCB QC10 QC11 QC12 QC13;
4550
4551 *****
4552 OLS REGRESSION AND RESIDUAL PLOTS H2
4553 *****;
4554
4555 PROC REG DATA=PBJ3;
4556
4557 H2M1: MODEL DCB = QC10 /TOL;
4558 H2M2: MODEL DCB = QC11 /TOL;
4559 H2M3: MODEL DCB = QC12 /TOL;
4560 H2M4: MODEL DCB = QC13 /TOL;
4561 H2M5: MODEL DCB = QC10 QC11 /TOL; TEST QC11=0;
4562 H2M6: MODEL DCB = QC10 QC12 /TOL; TEST QC12=0;
4563 H2M7: MODEL DCB = QC10 QC13 /TOL; TEST QC13=0;
4564 H2M8: MODEL DCB = QC11 QC12 /TOL; TEST QC12=0;
4565 H2M9: MODEL DCB = QC11 QC13 /TOL; TEST QC13=0;
4566 H2M10: MODEL DCB = QC12 QC13 /TOL; TEST QC13=0;
4567 H2M11: MODEL DCB = QC10 QC11 QC12 /TOL; TEST QC11=0 QC12=0;
4568 H2M12: MODEL DCB = QC10 QC11 QC13 /TOL; TEST QC11=0 QC13=0;
4569 H2M13: MODEL DCB = QC11 QC12 QC13 /TOL; TEST QC12=0 QC13=0;
4570 H2M14: MODEL DCB = QC10 QC11 QC12 QC13 /TOL; TEST QC11=0 QC12=0 QC13=0;
4571
4572 *****
4573 CHECKING THE FINAL MODEL IN H2
4574 *****;
4575
4576 DATA HDAT2A; SET PBJ3;
4577 PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
4578 OUTPUT OUT=HDAT2A COOKD=COOKD RSTUDENT=DELRES H=HAT;
4579 PROC UNIVARIATE PLOT NORMAL DATA=HDAT2A;
4580 VAR DELRES;
4581
4582 *****
4583 SENSITIVITY ANALYSIS H2
4584 *****;
4585 *Identifying the atypical datapoints singled out by CookD;
4586
4587 DATA ATYP2; SET HDAT2A;
4588 IF COOKD>.10;
4589 PROC PRINT DATA=ATYP2;
4590 VAR DCB QC10 QC11 QC12 QC13;
4591
4592 *Removing the atypical datapoint (X)KID and refitting the

```

```

4593         final model;
4594
4595 DATA SENSTV2; SET HDAT2A;
4596     IF COOKD,.10;
4597 PROC REG DATA=SENSTV2;
4598     M** MODEL
4599
4600
4601
4602 *-----*
4603     PCA AND REGRESSION FOR HYPOTHESIS 3
4604 *-----*;
4605
4606
4607 PROC PRINCOMP N=5 DATA=PBJ3  PREFIX=W3A  OUT=HDAT3A;
4608     VAR J11 J12 J13,
4609 PROC PRINT DATA=HDAT3A;
4610     VAR IDNUM W3A1 W3A2;
4611 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT3A;
4612     VAR W3A1 W3A2;
4613
4614     *****
4615     DATA DISPLAY, CORRELATIONS H3
4616     *****;
4617
4618 PROC PRINT DATA=HDAT3A;
4619     VAR J11 J12 J13 W3A1 W3A2;
4620
4621 PROC CORR NOPROB DATA=HDAT3A;
4622     VAR DCB J11 J12 J13 W3A1 W3A2;
4623
4624     *****
4625     OLS REGRESSION AND RESIDUAL PLOTS H3
4626     *****;
4627
4628 *TITLE 'HYPOTHESIS 3';
4629
4630 PROC REG DATA=HDAT3A;
4631
4632 H3M1: MODEL DCB = W3A1;
4633 H3M2: MODEL DCB = N14;
4634 H3M3: MODEL DCB = H1;
4635 H3M4: MODEL DCB = W3A1 N14;    TEST N14=0;
4636 H3M5: MODEL DCB = W3A1 H1;    TEST H1=0;
4637 H3M6: MODEL DCB = N14 H1;    TEST H1=0;
4638 H3M7: MODEL DCB = W3A1 N14 H1;    TEST N14=0, H1=0;
4639 */
4640 /*
4641     *****
4642     CHECKING THE FINAL MODEL IN H3
4643     *****;
4644
4645 PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
4646     OUTPUT OUT=HDAT3A COOKD=COOKD RSTUDENT=DELRES H=HAT;
4647 PROC UNIVARIATE PLOT NORMAL DATA=HDAT3A;
4648     VAR DELRES;
4649

```

```

4650          *****
4651          SENSITIVITY ANALYSIS H3
4652          *****;
4653          *Identifying the atypical datapoints singled out by CookD;
4654
4655          DATA ATYP3; SET HDAT3A;
4656             IF COOKD>.10;
4657          PROC PRINT DATA=ATYP3;
4658             VAR DCB J11 J12 J13 W3A1 W3A2;
4659
4660          *Removing the atypical datapoint COOKD and refitting the
4661             final model;
4662
4663          DATA SENSTV3; SET HDAT3A;
4664             IF COOKD,.10;
4665          PROC REG DATA=SENSTV3;
4666             M** MODEL
4667          /*
4668          *-----*
4669             PCA AND REGRESSION FOR HYPOTHESIS 4
4670          *-----*;
4671          /*
4672          PROC PRINCOMP N=5 DATA=PBJ3 PREFIX=W4A OUT=HDAT4A;
4673             VAR N3 N15;
4674          PROC PRINT DATA=HDAT4A;
4675             VAR IDNUM W4A1 W4A2;
4676          PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT4A;
4677             VAR W4A1 W4A2;
4678
4679
4680          PROC PRINCOMP N=5 DATA=HDAT4A PREFIX=W4B OUT=HDAT4B;
4681             VAR PJ1 PJ2 PJ3 PJ4 PJ5 PJ6 PJ7;
4682          PROC PRINT DATA=HDAT4B;
4683             VAR IDNUM W4B1 W4B2;
4684          PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT4B;
4685             VAR W4B1 W4B2;
4686
4687
4688          *****
4689          DATA DISPLAY H4
4690          *****;
4691
4692          PROC PRINT DATA=HDAT4B;
4693             VAR IDNUM W4A1 W4B1 H2;
4694
4695          PROC CORR NOPROB DATA=HDAT4B;
4696             VAR DCB W4A1 W4B1 H2;
4697          *****
4698          OLS REGRESSION AND RESIDUAL PLOTS H4
4699          *****;
4700
4701          *TITLE 'HYPOTHESIS 4';
4702
4703          PROC REG DATA=HDAT4B;
4704
4705          H4M1: MODEL DCB = W4A1;
4706          H4M2: MODEL DCB = H2;

```

```

4707 H4M3: MODEL DCB = W4B1;
4708 H4M4: MODEL DCB = W4A1 H2;      TEST H2=0;
4709 H4M5: MODEL DCB = W4A1 W4B1;    TEST W4B1=0;
4710 H4M6: MODEL DCB = W4B1 H2;      TEST H2=0;
4711 H4M7: MODEL DCB = W4A1 H2 W4B1;  TEST H2=0, W4B1=0;
4712
4713
4714 *****
4715 CHECKING THE FINAL MODEL IN H4
4716 *****;
4717
4718 PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
4719 OUTPUT OUT=HDATA4B COOKD=COOKD RSTUDENT=DELRES H=HAT;
4720 PROC UNIVARIATE PLOT NORMAL DATA=HDATA4B;
4721 VAR DELRES;
4722
4723 *****
4724 SENSITIVITY ANALYSIS H4
4725 *****;
4726 *Identifying the atypical datapoints singled out by CookD;
4727
4728 DATA ATYP4; SET HDATA4B;
4729 IF COOKD>.10;
4730 PROC PRINT DATA=ATYP4;
4731 VAR DCB W4A1 W4B1 H2;
4732
4733 *Removing the atypical datapoint COOKD and refitting the
4734 final model;
4735
4736 DATA SENSTV4; SET HDATA4B;
4737 IF COOKD<=.10;
4738 PROC REG DATA=SENSTV4;
4739 M** MODEL
4740 */
4741
4742
4743
4744 *****
4745 -----
4746 TRAINING
4747 -----
4748 *****;
4749
4750
4751 /*
4752
4753
4754 PROC PRINCOMP N=5 DATA=TISHNEW1 PREFIX=TRANFA1 OUT=PFA1;
4755 VAR FA1-FA8 FA11 FA12;
4756 PROC PRINT DATA=PFA1;
4757 VAR IDNUM TRANFA11 TRANFA12;
4758 PROC UNIVARIATE PLOT NORMAL DATA=PFA1;
4759 VAR TRANFA11 TRANFA12;
4760
4761 PROC PRINCOMP N=5 DATA=TISHNEW1 PREFIX=TRANFJ1 OUT=PFJ1;
4762 VAR FJ1-FJ8 FJ11 FJ12;
4763 PROC PRINT DATA=PFJ1;

```

```

4764   VAR IDNUM TRANFJ11 TRANFJ12;
4765   PROC UNIVARIATE PLOT NORMAL DATA=PFJ1;
4766     VAR TRANFJ11 TRANFJ12;
4767
4768
4769   */
4770
4771
4772   *-----*
4773     DIFFERENCES BETWEEN TRAINING COMPOSITES
4774   *-----*;
4775
4776
4777   /*
4778
4779   PROC PRINT DATA=PBJ3; VAR IDNUM DCB1;
4780   PROC UNIVARIATE PLOT NORMAL FREQ DATA=PBJ3;
4781     VAR DCB1;
4782
4783
4784   PROC PRINT DATA=PBJ3; VAR IDNUM DCB2;
4785   PROC UNIVARIATE PLOT NORMAL FREQ DATA=PBJ3;
4786     VAR DCB2;
4787
4788
4789   PROC PRINT DATA=PBJ3; VAR IDNUM DCB3;
4790   PROC UNIVARIATE PLOT NORMAL FREQ DATA=PBJ3;
4791     VAR DCB3;
4792   */
4793
4794
4795
4796
4797
4798     *****
4799     CREATING DCB
4800     *****;
4801   /*
4802   DATA PBJ3; SET PBJ3;
4803   DCB1 = SELECBA1 - SELECBJ1;
4804   DCB = (1000)*(DCB1);
4805
4806   PROC PRINT DATA=PBJ3;
4807     VAR IDNUM DCB DCB1;
4808   PROC UNIVARIATE PLOT NORMAL FREQ DATA=PBJ3;
4809     VAR DCB DCB1;
4810
4811   PROC CORR DATA=PBJ3 NOSIMPLE;
4812     VAR DCB;
4813     WITH J7 J8 J1 J2 J3 J9 J10;
4814
4815   PROC CORR DATA=PBJ3 NOSIMPLE;
4816     VAR J7 J8 J1 J2 J3 J9 J10;
4817     WITH DCB;
4818   */
4819
4820     *****

```

```

4821          TRAINING
4822          HYPOTHESIS TESTING USING REGRESSION
4823          *****;
4824
4825
4826          *-----*
4827          PCA AND REGRESSION FOR HYPOTHESIS 1
4828          *-----*;
4829
4830          *****
4831          PCA H1
4832          *****;
4833          /*
4834
4835          PROC PRINCOMP N=5 DATA=PBJ3  PREFIX=JCONT  OUT=HDAT1A;
4836          VAR J9 J10;
4837
4838          PROC PRINCOMP N=5 DATA=HDAT1A  PREFIX=JCLAR  OUT=HDAT1B;
4839          VAR J1 J2 J3;
4840
4841          *****
4842          DATA DISPLAY, CORRELATIONS H1
4843          *****;
4844
4845          PROC PRINT DATA=HDAT1A;
4846          VAR IDNUM JCONT1 JCONT2;
4847          PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT1A;
4848          VAR JCONT1 JCONT2;
4849
4850          PROC PRINT DATA=HDAT1B;
4851          VAR IDNUM JCLAR1 JCLAR2;
4852          PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT1B;
4853          VAR JCLAR1 JCLAR2;
4854
4855          *****
4856          DATA DISPLAY, CORRELATIONS H1
4857          *****;
4858
4859          PROC PRINT DATA=HDAT1B;
4860          VAR IDNUM JCONT1 JCLAR1 J7;
4861
4862          PROC CORR NOPROB DATA=HDAT1B;
4863          VAR DCB JCONT1 JCLAR1 J7 J8;
4864
4865          PROC CORR NOPROB DATA=HDAT1B;
4866          VAR DCB J7 J8 J1 J2 J3 J9 J10;
4867
4868          *****
4869          OLS REGRESSION AND RESIDUAL PLOTS H1
4870          *****;
4871
4872          * TITLE 'HYPOTHESIS 1';
4873
4874          PROC REG DATA=HDAT1B;
4875
4876          H1M1: MODEL DCB = JCONT1/TO1.;
4877

```



```

4878 H1M2: MODEL DCB = JCLAR1 /TOL;
4879 H1M3: MODEL DCB = J7 /TOL;
4880 H1M4: MODEL DCB = J8 /TOL;
4881 H1M5: MODEL DCB = JCONT1 JCLAR1 /TOL; TEST JCLAR1=0;
4882 H1M6: MODEL DCB = JCONT1 J7 /TOL; TEST J7=0;
4883 H1M7: MODEL DCB = JCONT1 J8 /TOL; TEST J8=0;
4884 H1M8: MODEL DCB = JCLAR1 J7 /TOL; TEST JCLAR1=0;
4885 H1M9: MODEL DCB = JCLAR1 J8 /TOL; TEST JCLAR1=0;
4886 H1M10: MODEL DCB = J7 J8 /TOL; TEST J8=0;
4887 H1M11: MODEL DCB = JCONT1 JCLAR1 J7 /TOL; TEST JCLAR1=0, J7=0;
4888 H1M12: MODEL DCB = JCONT1 JCLAR1 J8 /TOL; TEST JCLAR1=0, J8=0;
4889 H1M13: MODEL DCB = JCONT1 J7 J8 /TOL; TEST J7=0, J8=0;
4890 H1M14: MODEL DCB = JCLAR1 J7 J8 /TOL; TEST J7=0, J8=0;
4891 H1M15: MODEL DCB = JCONT1 JCLAR1 J7 J8 /TOL;
4892 TEST JCLAR1=0, J7=0, J8=0;
4893
4894
4895 *****
4896 CHECKING THE FINAL MODEL IN H1
4897 *****;
4898
4899 PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
4900 OUTPUT OUT=HDAT1B COOKD=COOKD RSTUDENT=DELRES H=HAT;
4901 PROC UNIVARIATE PLOT NORMAL DATA=HDAT1B;
4902 VAR DELRES;
4903
4904 *****
4905 SENSITIVITY ANALYSIS H1
4906 *****;
4907 *Identifying the atypical datapoints singled out by CookD;
4908
4909 DATA ATYP1; SET HDAT1B;
4910 IF COOKD>.10;
4911 PROC PRINT DATA=ATYP1;
4912 VAR DCB JCONT1 JCLAR1 J7 J8;
4913
4914 *Removing the atypical datapoint COOKD and refitting the
4915 final model;
4916
4917 DATA SENSTV1; SET HDAT1B;
4918 IF COOKD<=.10;
4919 PROC REG DATA=SENSTV1;
4920 M** MODEL
4921
4922
4923 */
4924 *-----*
4925 PCA AND REGRESSION FOR HYPOTHESIS 2
4926 *-----*;
4927 /* *****
4928 DATA DISPLAY, CORRELATIONS H2
4929 *****;
4930
4931 *TITLE 'HYPOTHESIS 2';
4932
4933 PROC PRINT DATA=PBJ3;
4934 VAR IDNUM QC10 QC11 QC12 QC13;

```

```

4935
4936 PROC CORR NOPROB DATA=PBJ3;
4937     VAR DCB QC10 QC11 QC12 QC13;
4938
4939     *****
4940     OLS REGRESSION AND RESIDUAL PLOTS H2
4941     *****;
4942
4943 PROC REG DATA=PBJ3;
4944
4945 H2M1: MODEL DCB = QC10 /TOL;
4946 H2M2: MODEL DCB = QC11 /TOL;
4947 H2M3: MODEL DCB = QC12 /TOL;
4948 H2M4: MODEL DCB = QC13 /TOL;
4949 H2M5: MODEL DCB = QC10 QC11 /TOL;     TEST QC11=0;
4950 H2M6: MODEL DCB = QC10 QC12 /TOL;     TEST QC12=0;
4951 H2M7: MODEL DCB = QC10 QC13 /TOL;     TEST QC13=0;
4952 H2M8: MODEL DCB = QC11 QC12 /TOL;     TEST QC12=0;
4953 H2M9: MODEL DCB = QC11 QC13 /TOL;     TEST QC13=0;
4954 H2M10: MODEL DCB = QC12 QC13 /TOL;     TEST QC13=0;
4955 H2M11: MODEL DCB = QC10 QC11 QC12 /TOL;     TEST QC11=0 QC12=0;
4956 H2M12: MODEL DCB = QC10 QC11 QC13 /TOL;     TEST QC11=0 QC13=0;
4957 H2M13: MODEL DCB = QC11 QC12 QC13 /TOL;     TEST QC12=0 QC13=0;
4958 H2M14: MODEL DCB = QC10 QC11 QC12 QC13 /TOL; TEST QC11=0 QC12=0 QC13=0;
4959
4960     *****
4961     CHECKING THE FINAL MODEL IN H2
4962     *****;
4963
4964 DATA HDAT2A; SET PBJ3;
4965     PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
4966     OUTPUT OUT=HDAT2A COOKD=COOKD RSTUDENT=DELRES H=HAT;
4967     PROC UNIVARIATE PLOT NORMAL DATA=HDAT2A;
4968     VAR DELRES;
4969
4970     *****
4971     SENSITIVITY ANALYSIS H2
4972     *****;
4973     *Identifying the atypical datapoints singled out by CookD;
4974
4975 DATA ATYP2; SET HDAT2A;
4976     IF COOKD>.10;
4977     PROC PRINT DATA=ATYP2;
4978     VAR DCB QC10 QC11 QC12 QC13;
4979
4980     *Removing the atypical datapoint COOKD and refitting the
4981     final model;
4982
4983 DATA SENSTV2; SET HDAT2A;
4984     IF COOKD<=.10;
4985     PROC REG DATA=SENSTV2;
4986     M** MODEL
4987
4988
4989
4990     *-----*
4991     PCA AND REGRESSION FOR HYPOTHESIS 3

```

```

4992 *-----*;
4993
4994
4995 PROC PRINCOMP N=5 DATA=PBJ3 PREFIX=W3A OUT=HDAT3A;
4996 VAR J11 J12 J13;
4997 PROC PRINT DATA=HDAT3A;
4998 VAR IDNUM W3A1 W3A2;
4999 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT3A;
5000 VAR W3A1 W3A2;
5001
5002 *****
5003 DATA DISPLAY, CORRELATIONS H3
5004 *****;
5005
5006 PROC PRINT DATA=HDAT3A;
5007 VAR J11 J12 J13 W3A1 W3A2;
5008
5009 PROC CORR NOPROB DATA=HDAT3A;
5010 VAR DCB J11 J12 J13 W3A1 W3A2;
5011
5012 *****
5013 OLS REGRESSION AND RESIDUAL PLOTS H3
5014 *****;
5015
5016 *TITLE 'HYPOTHESIS 3';
5017
5018 PROC REG DATA=HDAT3A;
5019
5020 H3M1: MODEL DCB = W3A1;
5021 H3M2: MODEL DCB = N14;
5022 H3M3: MODEL DCB = H1;
5023 H3M4: MODEL DCB = W3A1 N14; TEST N14=O;
5024 H3M5: MODEL DCB = W3A1 H1; TEST H1=O;
5025 H3M6: MODEL DCB = N14 H1; TEST H1=O;
5026 H3M7: MODEL DCB = W3A1 N14 H1; TEST N14=O, H1=O;
5027 */
5028 /*
5029 *****
5030 CHECKING THE FINAL MODEL IN H3
5031 *****;
5032
5033 PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
5034 OUTPUT OUT=HDAT3A COOKD=COOKD RSTUDENT=DELRES H=HAT;
5035 PROC UNIVARIATE PLOT NORMAL DATA=HDAT3A;
5036 VAR DELRES;
5037
5038 *****
5039 SENSITIVITY ANALYSIS H3
5040 *****;
5041 *Identifying the atypical datapoints singled out by CookD;
5042
5043 DATA ATYP3; SET HDAT3A;
5044 IF COOKD>.10;
5045 PROC PRINT DATA=ATYP3;
5046 VAR DCB J11 J12 J13 W3A1 W3A2;
5047
5048 *Removing the atypical datapoint COOKD and refitting the

```

```

5049         final model;
5050
5051 DATA SENSTV3; SET HDAT3A;
5052     IF COOKD,.10;
5053 PROC REG DATA=SENSTV3;
5054     M** MODEL
5055 */
5056 *-----*
5057         PCA AND REGRESSION FOR HYPOTHESIS 4
5058 *-----*;
5059 /*
5060 PROC PRINCOMP N=5 DATA=PBJ3 PREFIX=W4A OUT=HDAT4A;
5061     VAR N3 N15;
5062 PROC PRINT DATA=HDAT4A;
5063     VAR IDNUM W4A1 W4A2;
5064 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT4A;
5065     VAR W4A1 W4A2;
5066
5067
5068 PROC PRINCOMP N=5 DATA=HDAT4A PREFIX=W4B OUT=HDAT4B;
5069     VAR PJ1 PJ2 PJ3 PJ4 PJ5 PJ6 PJ7;
5070 PROC PRINT DATA=HDAT4B;
5071     VAR IDNUM W4B1 W4B2;
5072 PROC UNIVARIATE PLOT NORMAL FREQ DATA=HDAT4B;
5073     VAR W4B1 W4B2;
5074
5075
5076         *****
5077         DATA DISPLAY H4
5078         *****;
5079
5080 PROC PRINT DATA=HDAT4B;
5081     VAR IDNUM W4A1 W4B1 H2;
5082
5083 PROC CORR NOPROB DATA=HDAT4B;
5084     VAR DCB W4A1 W4B1 H2;
5085     *****
5086     OLS REGRESSION AND RESIDUAL PLOTS H4
5087     *****;
5088
5089 *TITLE 'HYPOTHESIS 4';
5090
5091 PROC REG DATA=HDAT4B;
5092
5093 H4M1: MODEL DCB = W4A1;
5094 H4M2: MODEL DCB = H2;
5095 H4M3: MODEL DCB = W4B1;
5096 H4M4: MODEL DCB = W4A1 H2;     TEST H2=0;
5097 H4M5: MODEL DCB = W4A1 W4B1;   TEST W4B1=0;
5098 H4M6: MODEL DCB = W4B1 H2;     TEST H2=0;
5099 H4M7: MODEL DCB = W4A1 H2 W4B1; TEST H2=0, W4B1=0;
5100
5101
5102         *****
5103         CHECKING THE FINAL MODEL IN H4
5104         *****;
5105

```

```

5106 PLOT (COOKD. RSTUDENT. H.) * PREDICTED. = '+';
5107     OUTPUT OUT=HDAT4B COOKD=COOKD RSTUDENT=DELRES H=HAT;
5108 PROC UNIVARIATE PLOT NORMAL DATA=HDAT4B;
5109     VAR DELRES;
5110
5111     *****
5112     SENSITIVITY ANALYSIS H4
5113     *****;
5114     *Identifying the atypical datapoints singled out by CookD;
5115
5116 DATA ATYP4; SET HDAT4B;
5117     IF COOKD>.10;
5118 PROC PRINT DATA=ATYP4;
5119     VAR DCB W4A1 W4B1 H2;
5120
5121     *Removing the atypical datapoint COOKD and refitting the
5122     final model;
5123
5124 DATA SENSTV4; SET HDAT4B;
5125     IF COOKD<=.10;
5126 PROC REG DATA=SENSTV4;
5127     M** MODEL
5128     */
5129
5130     *-----*
5131     NEW VARIABLES FOR H18 N15 PU PJ
5132     *-----*;
5133

```

NOTE: The data set WORK.TISHNEW4 has 55 observations and 337 variables.

NOTE: Compressing data set WORK.TISHNEW4 decreased size by 33.33 percent.

Compressed is 4 pages; un-compressed would require 6 pages.

```

5134 DATA NEWVAR1; SET TISHNEW1;
5135
5136 IF ASTRAT4=0 THEN ASTRAT4R=1;
5137 IF ASTRAT4=1 THEN ASTRAT4R=0;
5138
5139 IF (H1 = 1) THEN H1R = 90;
5140 IF (H1 = 2) THEN H1R = 80;
5141 IF (H1 = 3) THEN H1R = 50;
5142 IF (H1 = 4) THEN H1R = 20;
5143 IF (H1 = 5) THEN H1R = 0;
5144
5145 IF (H2 = 1) THEN H2R = 90;
5146 IF (H2 = 2) THEN H2R = 80;
5147 IF (H2 = 3) THEN H2R = 50;
5148 IF (H2 = 4) THEN H2R = 20;
5149 IF (H2 = 5) THEN H2R = 0;
5150
5151 IF (H17 = 1) THEN H17R = 93;
5152 IF (H17 = 2) THEN H17R = 60;
5153 IF (H17 = 3) THEN H17R = 43;
5154 IF (H17 = 4) THEN H17R = 19;
5155 IF (H17 = 5) THEN H17R = 10;
5156
5157 IF (H18 = 1) THEN H18R = 21;

```

```
5158 IF (H18 = 2) THEN H18R = 19;
5159 IF (H18 = 3) THEN H18R = 13;
5160 IF (H18 = 4) THEN H18R = 7;
5161 IF (H18 = 5) THEN H18R = 3;
5162
5163 IF J18=1 THEN J18R=7;
5164 IF J18=2 THEN J18R=6;
5165 IF J18=3 THEN J18R=5;
5166 IF J18=4 THEN J18R=4;
5167 IF J18=5 THEN J18R=3;
5168 IF J18=6 THEN J18R=2;
5169 IF J18=7 THEN J18R=1;
5170
5171 IF J19=1 THEN J19R=7;
5172 IF J19=2 THEN J19R=6;
5173 IF J19=3 THEN J19R=5;
5174 IF J19=4 THEN J19R=4;
5175 IF J19=5 THEN J19R=3;
5176 IF J19=6 THEN J19R=2;
5177 IF J19=7 THEN J19R=1;
5178
5179
5180 IF J20=1 THEN J20R=7;
5181 IF J20=2 THEN J20R=6;
5182 IF J20=3 THEN J20R=5;
5183 IF J20=4 THEN J20R=4;
5184 IF J20=5 THEN J20R=3;
5185 IF J20=6 THEN J20R=2;
5186 IF J20=7 THEN J20R=1;
5187
5188 IF N3=0 THEN N3R=1;
5189 IF N3=1 THEN N3R=0;
5190
5191 IF N11=0 THEN N11R=1;
5192 IF N11=1 THEN N11R=0;
5193
5194 IF N12=2 THEN N12R=1;
5195 IF N12=1 THEN N12R=0;
5196
5197 IF N13=2 THEN N13R=1;
5198 IF N13=1 THEN N13R=0;
5199
5200
5201 IF N14=1 THEN N14R=1;
5202 IF N14=2 THEN N14R=0;
5203 IF N14=3 THEN N14R=.5;
5204
5205
5206 IF (N15 = 1) THEN N15R = -1;
5207 IF (N15 = 2) THEN N15R = 1;
5208 IF (N15 = 3) THEN N15R = 0;
5209 IF (N15 = 4) THEN N15R = 0;
5210
5211 DIFPUJ1 = PU1 - PJ1;
5212 DIFPUJ2 = PU2 - PJ2;
5213 DIFPUJ3 = PU3 - PJ3;
5214 DIFPUJ4 = PU4 - PJ4;
```

```

5215   DIFPUJ5 = PU5 - PJ5;
5216   DIFPUJ6 = PU6 - PJ6;
5217   DIFPUJ7 = PU7 - PJ7;
5218
5219   IF R11=1 THEN R11R=7;
5220   IF R11=2 THEN R11R=6;
5221   IF R11=3 THEN R11R=5;
5222   IF R11=4 THEN R11R=4;
5223   IF R11=5 THEN R11R=3;
5224   IF R11=6 THEN R11R=2;
5225   IF R11=7 THEN R11R=1;
5226
5227   IF R5=1 THEN R5R=7;
5228   IF R5=2 THEN R5R=6;
5229   IF R5=3 THEN R5R=5;
5230   IF R5=4 THEN R5R=4;
5231   IF R5=5 THEN R5R=3;
5232   IF R5=6 THEN R5R=2;
5233   IF R5=7 THEN R5R=1;
5234
5235   IF (1370 <= IDNUM <= 1450) THEN INDUST = 1;
5236   IF (1460 <= IDNUM <= 1462) THEN INDUST = 1;
5237   IF (1470 <= IDNUM <= 1490) THEN INDUST = 1;
5238   IF (1500 <= IDNUM <= 2060) THEN INDUST = 3;
5239   IF (2080 <= IDNUM <= 2220) THEN INDUST = 3;
5240   IF (2230 <= IDNUM <= 2260) THEN INDUST = 1;
5241   IF (2270 <= IDNUM <= 2290) THEN INDUST = 2;
5242   IF (2300 <= IDNUM <= 2310) THEN INDUST = 1;
5243   IF (2340 <= IDNUM <= 2342) THEN INDUST = 1;
5244   IF (2390 <= IDNUM <= 2410) THEN INDUST = 1;
5245   IF (2440 <= IDNUM <= 2490) THEN INDUST = 1;
5246   IF (2520 <= IDNUM <= 2820) THEN INDUST = 2;
5247   IF (2830 <= IDNUM <= 3082) THEN INDUST = 3;
5248   IF (3100 <= IDNUM <= 3130) THEN INDUST = 2;
5249   IF (3140 <= IDNUM <= 3142) THEN INDUST = 1;
5250   IF (3160 <= IDNUM <= 3220) THEN INDUST = 3;
5251   IF (3240 <= IDNUM <= 3620) THEN INDUST = 2;
5252   IF (3660 <= IDNUM <= 3780) THEN INDUST = 1;
5253   IF (4350 <= IDNUM <= 4560) THEN INDUST = 2;
5254   IF (4560 <= IDNUM <= 4920) THEN INDUST = 1;
5255   IF (5480 <= IDNUM <= 5680) THEN INDUST = 1;
5256
5257   *-----*
5258   COMPOSITING ISOMORPHIC VARIABLES
5259   *-----*;
5260   *****PCA ISO ROUND 1;
5261   /*
5262   PROC PRINCOMP N=3 DATA=NEWVAR1 PREFIX=BUDG1 OUT=ISO1;
5263     VAR J1 J2 J7 J8 R19 R20
5264     H1R J9 J10 J11 J12 J13 N14R ASTRAT2 AMINVEST;
5265
5266   PROC PRINCOMP N=3 DATA=ISO1 PREFIX=ENDS1 OUT=ISO2;
5267     VAR J1 J2 J7 J8 R19 R20
5268     QC1-QC13 ASTRAT1 ASTRAT2 ASTRAT4R ASTRAT5;
5269
5270   PROC PRINCOMP N=3 DATA=ISO2 PREFIX=TASK1 OUT=ISO3;
5271     VAR J1 J2 J7 J8 R19 R20

```

```
5272   ASTRAT3 ASTRAT4R H1R H2R H13 H14 H15 N3R N11 N15R DIFPUJ1-DIFPUJ7;
5273
5274   PROC PRINCOMP N=3 DATA=ISO3 PREFIX=NORM1 OUT=ISO4;
5275     VAR J1 J2 J7 J8 R19 R20
5276     H4 H7-H11 N12R N13R R21 R22;
5277
5278   PROC PRINCOMP N=3 DATA=ISO4 PREFIX=MIMET1 OUT=ISO5;
5279     VAR J1 J2 R19 R20
5280     H18R J18 J19 J20 KH1 KP1 KH2 KP2 M1 N9 R5 R6 R9 R10 R11 R15;
5281
5282   PROC PRINCOMP N=3 DATA=ISO5 PREFIX=CVAR1 OUT=ISO6;
5283     VAR EMPEES INDUST H17R H18R;
5284
5285   *****PCA ISO ROUND 2;
5286
5287   PROC PRINCOMP N=3 DATA=NEWVAR1 PREFIX=BUDG2 OUT=ISO11;
5288     VAR J1 J2 J7 J8
5289     J9 J10 J11 J12 J13 AMINVEST;
5290
5291   PROC PRINCOMP N=3 DATA=ISO11 PREFIX=ENDS2 OUT=ISO12;
5292     VAR J8 R19 R20 QC1-QC13 ASTRAT1;
5293
5294   PROC PRINCOMP N=3 DATA=ISO12 PREFIX=TASK2 OUT=ISO13;
5295     VAR R19 R20 H2R H13 N3R N11 N15R DIFPUJ1-DIFPUJ7;
5296
5297   PROC PRINCOMP N=3 DATA=ISO13 PREFIX=NORM2 OUT=ISO14;
5298     VAR J1 J2 J7 J8 R19 R20 H7 H11 N12R;
5299
5300   PROC PRINCOMP N=3 DATA=ISO14 PREFIX=MIMETC2 OUT=ISO15;
5301     VAR J1 J2 J7 J8 R19 R20 J18 J19 J20 KH1 KP1 KH2 KP2;
5302
5303   PROC PRINCOMP N=3 DATA=ISO15 PREFIX=CVAR2 OUT=ISO16;
5304     VAR EMPEES INDUST H17R H18R;
5305
5306   *****PCA ISO ROUND 3;
5307
5308
5309   PROC PRINCOMP N=3 DATA=NEWVAR1 PREFIX=BUDG4 OUT=ISO41;
5310     VAR J1 J2 J7 J8
5311     J9 J10 J11 J12 J13 AMINVEST;
5312
5313   PROC PRINCOMP N=3 DATA=ISO41 PREFIX=ENDS4 OUT=ISO42;
5314     VAR J8 R19 R20 QC1-QC13;
5315
5316   PROC PRINCOMP N=3 DATA=ISO42 PREFIX=TASK4 OUT=ISO43;
5317     VAR R19 R20 H2R N3R N11 N15R DIFPUJ1-DIFPUJ7;
5318
5319   PROC PRINCOMP N=3 DATA=ISO43 PREFIX=NORM4 OUT=ISO44;
5320     VAR J1 J2 J7 J8 R19 R20 H7 N12R;
5321
5322   PROC PRINCOMP N=3 DATA=ISO44 PREFIX=MIMETC4 OUT=ISO45;
5323     VAR J1 J2 J7 J8 R19 R20 J18 J19 J20 KH1 KP1 KH2 KP2;
5324
5325   PROC PRINCOMP N=3 DATA=ISO45 PREFIX=CVAR4 OUT=ISO46;
5326     VAR EMPEES INDUST H17R H18R;
5327
5328
```



```

5329 *****PCA ISO ROUND 34;
5330
5331 PROC PRINCOMP N=3 DATA=NEWVAR1 PREFIX=BUDG4 OUT=ISO41;
5332 VAR J1 J2 J7 J8;
5333
5334 PROC PRINCOMP N=3 DATA=ISO41 PREFIX=ENDS4 OUT=ISO42;
5335 VAR J8 R19 R20 QC1-QC13;
5336
5337 PROC PRINCOMP N=3 DATA=ISO42 PREFIX=TASK4 OUT=ISO43;
5338 VAR H2R N3R N11 DIFPUJ1-DIFPUJ7;
5339
5340 PROC PRINCOMP N=3 DATA=ISO43 PREFIX=NORM4 OUT=ISO44;
5341 VAR J1 J2 J7 J8 R19 R20 H7 N12R;
5342
5343 PROC PRINCOMP N=3 DATA=ISO44 PREFIX=MIMET4 OUT=ISO45;
5344 VAR J1 J2 R19 R20 J18 J19 J20 KH1 KP1 KH2 KP2;
5345
5346 PROC PRINCOMP N=3 DATA=ISO45 PREFIX=CVAR4 OUT=ISO46;
5347 VAR EMPEES INDUST H17R H18R;
5348
5349 *****PCA ISO ROUND 11A, FULL NO PREREQ SEPT. 9;
5350
5351 PROC PRINCOMP N=3 DATA=NEWVAR1 PREFIX=RULES4 OUT=ISO0;
5352 VAR J8 J9 J10;
5353
5354 PROC PRINCOMP N=3 DATA=ISO0 PREFIX=BUDG1 OUT=ISO1;
5355 VAR
5356 H1R J11 J12 J13 N14R ASTRAT2 AMINVEST QS4 QS5;
5357
5358 PROC PRINCOMP N=3 DATA=ISO1 PREFIX=ENDS1 OUT=ISO2;
5359 VAR
5360 QC1-QC13 ASTRAT1 ASTRAT2 ASTRAT4R ASTRAT5;
5361
5362 PROC PRINCOMP N=3 DATA=ISO2 PREFIX=TASK1 OUT=ISO3;
5363 VAR
5364 ASTRAT3 ASTRAT4R H1R H2R N3R N11R N15R DIFPUJ1-DIFPUJ7;
5365
5366 PROC PRINCOMP N=3 DATA=ISO3 PREFIX=NORM1 OUT=ISO4;
5367 VAR
5368 H4 H7-H11 H13-H15 N12R N13R R21 R22;
5369
5370 PROC PRINCOMP N=3 DATA=ISO4 PREFIX=MIMET1 OUT=ISO5;
5371 VAR J1 J2 R19 R20
5372 H18R J18 J19 J20 KH1 KP1 KH2 KP2 M1 N9 R5 R6 R9 R10 R11 R15;
5373
5374 PROC PRINCOMP N=3 DATA=ISO5 PREFIX=CVAR1 OUT=ISO6;
5375 VAR EMPEES INDUST H17R H18R;
5376 */
5377
5378
5379 *****PCA ISO SEPT.9B OCT.20, FINAL NO PREREQS, NO NEG. VECTORS;
5380

```

NOTE: The data set WORK.NEWVAR1 has 55 observations and 335 variables.

NOTE: Compressing data set WORK.NEWVAR1 decreased size by 33.33 percent.

Compressed is 4 pages; un-compressed would require 6 pages.

5381 PROC PRINCOMP N=3 DATA=NEWVAR1 PREFIX=RULES4 OUT=ISO40;
 5382 VAR J8 J9 J10;
 5383

WARNING: 2 of 55 observations in data set WORK.NEWVAR1 omitted due to missing values.

NOTE: The data set WORK.ISO40 has 55 observations and 338 variables.

NOTE: Compressing data set WORK.ISO40 decreased size by 33.33 percent.

Compressed is 4 pages; un-compressed would require 6 pages.

NOTE: The PROCEDURE PRINCOMP printed page 1.

5384 PROC PRINCOMP N=3 DATA=ISO40 PREFIX=BUDG4 OUT=ISO41; ;
 5385 VAR H1R J11 J12 J13 N14R QS4 QS5 AMINVEST;
 5386

WARNING: 19 of 55 observations in data set WORK.ISO40 omitted due to missing values.

NOTE: The data set WORK.ISO41 has 55 observations and 341 variables.

NOTE: Compressing data set WORK.ISO41 decreased size by 33.33 percent.

Compressed is 4 pages; un-compressed would require 6 pages.

NOTE: The PROCEDURE PRINCOMP printed pages 2-3.

5387 PROC PRINCOMP N=3 DATA=ISO41 PREFIX=ENDS4 OUT=ISO42;
 5388 VAR QC1-QC13;
 5389

NOTE: The data set WORK.ISO42 has 55 observations and 344 variables.

NOTE: Compressing data set WORK.ISO42 decreased size by 42.86 percent.

Compressed is 4 pages; un-compressed would require 7 pages.

NOTE: The PROCEDURE PRINCOMP printed pages 4-5.

5390 PROC PRINCOMP N=3 DATA=ISO42 PREFIX=TASK4 OUT=ISO43;
 5391 VAR ASTRAT4R H1R H2R N3R N15 N11 DIFPUJ5-DIFPUJ7;
 5392

WARNING: 20 of 55 observations in data set WORK.ISO42 omitted due to missing values.

NOTE: The data set WORK.ISO43 has 55 observations and 347 variables.

NOTE: Compressing data set WORK.ISO43 decreased size by 42.86 percent.

Compressed is 4 pages; un-compressed would require 7 pages.

NOTE: The PROCEDURE PRINCOMP printed pages 6-7.

5393 PROC PRINCOMP N=3 DATA=ISO43 PREFIX=NORM4 OUT=ISO44;
 5394 VAR H4 H7 H9 H15 N12R N13R R21;
 5395

WARNING: 2 of 55 observations in data set WORK.ISO43 omitted due to missing values.

NOTE: The data set WORK.ISO44 has 55 observations and 350 variables.

NOTE: Compressing data set WORK.ISO44 decreased size by 42.86 percent.

Compressed is 4 pages; un-compressed would require 7 pages.

NOTE: The PROCEDURE PRINCOMP printed pages 8-9.

5396 PROC PRINCOMP N=3 DATA=ISO44 PREFIX=MIMET4 OUT=ISO45;
 5397 VAR J1 J2 J18R J19R J20R KH1 KP1 KH2 KP2 R19 R20;
 5398

WARNING: 4 of 55 observations in data set WORK.ISO44 omitted due to missing values.

NOTE: The data set WORK.ISO45 has 55 observations and 353 variables.

NOTE: Compressing data set WORK.ISO45 decreased size by 42.86 percent.

Compressed is 4 pages; un-compressed would require 7 pages.

NOTE: The PROCEDURE PRINCOMP printed pages 10-11.

```

5399 PROC PRINCOMP N=3 DATA=ISO45 PREFIX=CVAR4 OUT=ISO46;
5400 VAR EMPEES INDUST H17R H18R;
5401 /*
5402 PROC UNIVARIATE DATA=ISO46 PLOT;
5403 var budg41;
5404 *VAR BUDG41 ENDS41 TASK41 NORM41 CVAR41 RULES41;
5405
5406 PROC CORR DATA=ISO46;
5407 VAR BUDG41 ENDS41 TASK41 NORM41 CVAR41 RULES41;
5408
5409
5410 PROC SORT DATA=ISO46 OUT=ISO47; BY DESCENDING BUDG41
5411 EMPEES INDUST H17R H18R AMINVEST;
5412 PROC PRINT DATA=ISO47; VAR BUDG41
5413 IDNUM EMPEES AMINVEST INDUST H17R H18R;
5414
5415 PROC SORT DATA=ISO46 OUT=ISO47; BY DESCENDING RULES41
5416 EMPEES INDUST H17R H18R AMINVEST;
5417 PROC PRINT DATA=ISO47; VAR RULES41
5418 IDNUM EMPEES AMINVEST INDUST H17R H18R;
5419
5420 PROC SORT DATA=ISO46 OUT=ISO47; BY DESCENDING ENDS41
5421 EMPEES INDUST H17R H18R AMINVEST;
5422 PROC PRINT DATA=ISO47; VAR ENDS41
5423 IDNUM EMPEES AMINVEST INDUST H17R H18R;
5424
5425
5426 PROC SORT DATA=ISO46 OUT=ISO47; BY DESCENDING TASK41
5427 EMPEES INDUST H17R H18R AMINVEST;
5428 PROC PRINT DATA=ISO47; VAR TASK41
5429 IDNUM EMPEES AMINVEST INDUST H17R H18R;
5430
5431 PROC SORT DATA=ISO46 OUT=ISO47; BY DESCENDING NORM41
5432 EMPEES INDUST H17R H18R AMINVEST;
5433 PROC PRINT DATA=ISO47; VAR NORM41
5434 IDNUM EMPEES AMINVEST INDUST H17R H18R;
5435 */
5436
5437 *-----*
5438 ABS INDIVID PRACTICE DIFFERENCES
5439 *-----*;
5440
5441 *****PERF AP'PRSL DIFF SCORES;
5442

```

WARNING: 10 of 55 observations in data set WORK.ISO45 omitted due to missing values.

NOTE: The data set WORK.ISO46 has 55 observations and 356 variables.

NOTE: Compressing data set WORK.ISO46 decreased size by 42.86 percent.

Compressed is 4 pages; un-compressed would require 7 pages.

NOTE: The PROCEDURE PRINCOMP printed page 12.

```

5443 DATA DDIFC1; SET ISO46;
5444 IF CA1 > 3;
5445 DIFSC1 = ABS(CA1 - CJ1);
5446

```

NOTE: The data set WORK.DDIFC1 has 43 observations and 357 variables.
NOTE: Compressing data set WORK.DDIFC1 decreased size by 33.33 percent.
Compressed is 4 pages; un-compressed would require 6 pages.

```
5447 DATA DDIFC2; SET ISO46;  
5448 IF CA2 > 3;  
5449 DIFSC2 = ABS(CA2 - CJ2);  
5450
```

NOTE: The data set WORK.DDIFC2 has 21 observations and 357 variables.
NOTE: Compressing data set WORK.DDIFC2 decreased size by 25.00 percent.
Compressed is 3 pages; un-compressed would require 4 pages.

```
5451 DATA DDIFC3; SET ISO46;  
5452 IF CA3 > 3;  
5453 DIFSC3 = ABS(CA3 - CJ3);  
5454
```

NOTE: The data set WORK.DDIFC3 has 42 observations and 357 variables.
NOTE: Compressing data set WORK.DDIFC3 decreased size by 33.33 percent.
Compressed is 4 pages; un-compressed would require 6 pages.

```
5455 DATA DDIFC4; SET ISO46;  
5456 IF CA4 > 3;  
5457 DIFSC4 = ABS(CA4 - CJ4);  
5458
```

NOTE: The data set WORK.DDIFC4 has 19 observations and 357 variables.
NOTE: Compressing data set WORK.DDIFC4 decreased size by 25.00 percent.
Compressed is 3 pages; un-compressed would require 4 pages.

```
5459 DATA DDIFC5; SET ISO46;  
5460 IF CA5 > 3;  
5461 DIFSC5 = ABS(CA5 - CJ5);  
5462
```

NOTE: Missing values were generated as a result of performing an operation on missing values.
Each place is given by: (Number of times) at (Line):(Column).
1 at 5461:11 1 at 5461:19

NOTE: The data set WORK.DDIFC5 has 28 observations and 357 variables.
NOTE: Compressing data set WORK.DDIFC5 decreased size by 25.00 percent.
Compressed is 3 pages; un-compressed would require 4 pages.

```
5463 DATA DDIFC6; SET ISO46;  
5464 IF CA6 > 3;  
5465 DIFSC6 = ABS(CA6 - CJ6);  
5466
```

NOTE: The data set WORK.DDIFC6 has 26 observations and 357 variables.
NOTE: Compressing data set WORK.DDIFC6 decreased size by 25.00 percent.
Compressed is 3 pages; un-compressed would require 4 pages.

```
5467 DATA DDIFC7; SET ISO46;  
5468 IF CA7 > 3;  
5469 DIFSC7 = ABS(CA7 - CJ7);  
5470
```

NOTE: The data set WORK.DDIFC7 has 32 observations and 357 variables.
 NOTE: Compressing data set WORK.DDIFC7 decreased size by 40.00 percent.
 Compressed is 3 pages; un-compressed would require 5 pages.

```
5471 DATA DDIFC8; SET ISO46;
5472 IF CA8 > 3;
5473 DIFSC8 = ABS(CA8 - CJ8);
5474
```

NOTE: The data set WORK.DDIFC8 has 39 observations and 357 variables.
 NOTE: Compressing data set WORK.DDIFC8 decreased size by 40.00 percent.
 Compressed is 3 pages; un-compressed would require 5 pages.

```
5475 DATA DDIFC9; SET ISO46;
5476 IF CA9 > 3;
5477 DIFSC9 = ABS(CA9 - CJ9);
5478
```

NOTE: The data set WORK.DDIFC9 has 41 observations and 357 variables.
 NOTE: Compressing data set WORK.DDIFC9 decreased size by 33.33 percent.
 Compressed is 4 pages; un-compressed would require 6 pages.

```
5479 DATA DDIFC10; SET ISO46;
5480 IF CA10 > 3;
5481 DIFSC10 = ABS(CA10 - CJ10);
5482
```

NOTE: The data set WORK.DDIFC10 has 24 observations and 357 variables.
 NOTE: Compressing data set WORK.DDIFC10 decreased size by 25.00 percent.
 Compressed is 3 pages; un-compressed would require 4 pages.

```
5483 DATA DDIFC11; SET ISO46;
5484 IF CA11 > 3;
5485 DIFSC11 = ABS(CA11 - CJ11);
5486
```

NOTE: The data set WORK.DDIFC11 has 36 observations and 357 variables.
 NOTE: Compressing data set WORK.DDIFC11 decreased size by 40.00 percent.
 Compressed is 3 pages; un-compressed would require 5 pages.

```
5487 DATA DDIFC12; SET ISO46;
5488 IF CA12 > 3;
5489 DIFSC12 = ABS(CA12 - CJ12);
5490
```

NOTE: Missing values were generated as a result of performing an operation on missing values.
 Each place is given by: (Number of times) at (Line):(Column).
 1 at 5489:12 1 at 5489:21

NOTE: The data set WORK.DDIFC12 has 42 observations and 357 variables.
 NOTE: Compressing data set WORK.DDIFC12 decreased size by 33.33 percent.
 Compressed is 4 pages; un-compressed would require 6 pages.

```
5491 DATA DDIFC13; SET ISO46;
5492 IF CA13 > 3;
5493 DIFSC13 = ABS(CA13 - CJ13);
5494
```

NOTE: The data set WORK.DDIFC13 has 36 observations and 357 variables.
NOTE: Compressing data set WORK.DDIFC13 decreased size by 40.00 percent.
Compressed is 3 pages; un-compressed would require 5 pages.

```
5495 DATA DDIFC14; SET ISO46;
5496 IF CA14 > 3;
5497 DIFSC14 = ABS(CA14 - CJ14);
5498
5499
5500
5501 /*
5502 PROC PRINT DATA= DDIFC1;
5503 VAR IDNUM DIFSC1 CA1 CJ1;
5504 PROC MEANS N MEAN STD DATA=DDIFC1;
5505 VAR DIFSC1 CA1 CJ1;
5506
5507
5508 PROC PRINT DATA= DDIFC2;
5509 VAR IDNUM DIFSC2 CA2 CJ2;
5510 PROC MEANS N MEAN STD DATA=DDIFC2;
5511 VAR DIFSC2 CA2 CJ2;
5512
5513
5514 PROC PRINT DATA= DDIFC3;
5515 VAR IDNUM DIFSC3 CA3 CJ3;
5516 PROC MEANS N MEAN STD DATA=DDIFC3;
5517 VAR DIFSC3 CA3 CJ3;
5518
5519
5520 PROC PRINT DATA= DDIFC4;
5521 VAR IDNUM DIFSC4 CA4 CA4;
5522 PROC MEANS N MEAN STD DATA=DDIFC4;
5523 VAR DIFSC4 CA4 CJ4;
5524
5525
5526 PROC PRINT DATA= DDIFC5;
5527 VAR IDNUM DIFSC5 CA5 CJ5;
5528 PROC MEANS N MEAN STD DATA=DDIFC5;
5529 VAR DIFSC5 CA5 CJ5;
5530
5531
5532 PROC PRINT DATA= DDIFC6;
5533 VAR IDNUM DIFSC6 CA6 CJ6;
5534 PROC MEANS N MEAN STD DATA=DDIFC6;
5535 VAR DIFSC6 CA6 CJ6;
5536
5537
5538 PROC PRINT DATA= DDIFC7;
5539 VAR IDNUM DIFSC7 CA7 CJ7;
5540 PROC MEANS N MEAN STD DATA=DDIFC7;
5541 VAR DIFSC7 CA7 CJ7;
5542
5543
5544 PROC PRINT DATA= DDIFC8;
5545 VAR IDNUM DIFSC8 CA8 CJ8;
5546 PROC MEANS N MEAN STD DATA=DDIFC8;
```

```
5547         VAR    DIFSC8 CA8 CJ8;
5548
5549
5550     PROC PRINT DATA=    DDIFC9;
5551         VAR IDNUM DIFSC9 CA9 CJ9;
5552     PROC MEANS N MEAN STD DATA=DDIFC9;
5553         VAR    DIFSC9 CA9 CJ9;
5554
5555
5556     PROC PRINT DATA=    DDIFC10;
5557         VAR IDNUM DIFSC10 CA10 CJ10;
5558     PROC MEANS N MEAN STD DATA=DDIFC10;
5559         VAR    DIFSC10 CA10 CJ10;
5560
5561
5562     PROC PRINT DATA=    DDIFC11;
5563         VAR IDNUM DIFSC11 CA11 CJ11;
5564     PROC MEANS N MEAN STD DATA=DDIFC11;
5565         VAR    DIFSC11 CA11 CJ11;
5566
5567
5568     PROC PRINT DATA=    DDIFC12;
5569         VAR IDNUM DIFSC12 CA12 CJ12;
5570     PROC MEANS N MEAN STD DATA=DDIFC12;
5571         VAR    DIFSC12 CA12 CJ12;
5572
5573
5574     PROC PRINT DATA=    DDIFC13;
5575         VAR IDNUM DIFSC13 CA13 CJ13;
5576     PROC MEANS N MEAN STD DATA=DDIFC13;
5577         VAR    DIFSC13 CA13 CJ13;
5578
5579
5580     PROC PRINT DATA=    DDIFC14;
5581         VAR IDNUM DIFSC14 CA14 CJ14;
5582     PROC MEANS N MEAN STD DATA=DDIFC14;
5583         VAR    DIFSC14 CA14 CJ14;
5584
5585     */
5586     *****CORRELATING ISO WITH PRACTICES STRONGLY EMPHD IN PARENT;
5587     /*
5588     PROC CORR DATA=ISO46 NOSIMPLE;
5589     VAR H1R J11 J12 N14R QS4 QS5;
5590
5591     PROC CORR DATA=ISO46 NOSIMPLE;
5592     VAR J8 J9 J10;
5593
5594     PROC CORR DATA=DDIFC1 NOSIMPLE;
5595     VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
5596     J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
5597     QC1-QC12 R10 R11 R19-R22;
5598     WITH    DIFSC1;
5599
5600     PROC CORR DATA=DDIFC2 NOSIMPLE;
5601     VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
5602     J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
5603     QC1-QC12 R10 R11 R19-R22;
```

```
5604 WITH DIFSC2;
5605
5606 PROC CORR DATA=DDIFC3 NOSIMPLE;
5607 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
5608 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
5609 QC1-QC12 R10 R11 R19-R22;
5610 WITH DIFSC3;
5611
5612 PROC CORR DATA=DDIFC4 NOSIMPLE;
5613 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
5614 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
5615 QC1-QC12 R10 R11 R19-R22;
5616 WITH DIFSC4;
5617
5618 PROC CORR DATA=DDIFC4 NOSIMPLE;
5619 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
5620 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
5621 QC1-QC12 R10 R11 R19-R22;
5622 WITH DIFSC4;
5623
5624
5625 PROC CORR DATA=DDIFC5 NOSIMPLE;
5626 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
5627 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
5628 QC1-QC12 R10 R11 R19-R22;
5629 WITH DIFSC5;
5630
5631 PROC CORR DATA=DDIFC6 NOSIMPLE;
5632 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
5633 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
5634 QC1-QC12 R10 R11 R19-R22;
5635 WITH DIFSC6;
5636
5637 PROC CORR DATA=DDIFC7 NOSIMPLE;
5638 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
5639 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
5640 QC1-QC12 R10 R11 R19-R22;
5641 WITH DIFSC7;
5642
5643 PROC CORR DATA=DDIFC8 NOSIMPLE;
5644 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
5645 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
5646 QC1-QC12 R10 R11 R19-R22;
5647 WITH DIFSC8;
5648
5649 PROC CORR DATA=DDIFC9 NOSIMPLE;
5650 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
5651 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
5652 QC1-QC12 R10 R11 R19-R22;
5653 WITH DIFSC9;
5654
5655 PROC CORR DATA=DDIFC10 NOSIMPLE;
5656 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
5657 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
5658 QC1-QC12 R10 R11 R19-R22;
5659 WITH DIFSC10;
5660
```



```

5661 PROC CORR DATA=DDIFC11 NOSIMPLE;
5662 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
5663 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
5664 QC1-QC12 R10 R11 R19-R22;
5665 WITH DIFSC11;
5666
5667
5668 PROC CORR DATA=DDIFC12 NOSIMPLE;
5669 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
5670 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
5671 QC1-QC12 R10 R11 R19-R22;
5672 WITH DIFSC12;
5673
5674 PROC CORR DATA=DDIFC13 NOSIMPLE;
5675 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
5676 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
5677 QC1-QC12 R10 R11 R19-R22;
5678 WITH DIFSC13;
5679
5680 PROC CORR DATA=DDIFC14 NOSIMPLE;
5681 VAR EMPEES INDUST ASTRAT1-ASTRAT4 H1-H4 H7-H11 H13-H15 H18R
5682 J1 J2 J7-J9 KP1-KP2 KH1-KH2 N12 N13 N15R DIFPUJ1-DIFPUJ7
5683 QC1-QC12 R10 R11 R19-R22;
5684 WITH DIFSC14;
5685 */
5686
5687 *-----*
5688 REGRESSIONS WITH INDIVID DIFF SCORES STRONGLY EMPHD IN PAR
5689 *-----*;
5690 *****PERF APPRSL PRACTICES;
5691 /*
5692 PROC REG DATA=DDIFC1;
5693 SDC1M1: MODEL DIFSC1 = COBUDG41;
5694 SDC1M2: MODEL DIFSC1 = COENDS41;
5695 SDC1M3: MODEL DIFSC1 = COTASK41;
5696 SDC1M4: MODEL DIFSC1 = CONORM41;
5697 SDC1M6: MODEL DIFSC1 = MIMETI41;
5698
5699 PROC REG DATA=DDIFC2;
5700 SDC2M1: MODEL DIFSC2 = COBUDG41;
5701 SDC2M2: MODEL DIFSC2 = COENDS41;
5702 SDC2M3: MODEL DIFSC2 = COTASK41;
5703 SDC2M4: MODEL DIFSC2 = CONORM41;
5704 SDC2M6: MODEL DIFSC2 = MIMETI41;
5705
5706 PROC REG DATA=DDIFC3;
5707 SDC3M1: MODEL DIFSC3 = COBUDG41;
5708 SDC3M2: MODEL DIFSC3 = COENDS41;
5709 SDC3M3: MODEL DIFSC3 = COTASK41;
5710 SDC3M4: MODEL DIFSC3 = CONORM41;
5711 SDC3M6: MODEL DIFSC3 = MIMETI41;
5712
5713 PROC REG DATA=DDIFC4;
5714 SDC4M1: MODEL DIFSC4 = COBUDG41;
5715 SDC4M2: MODEL DIFSC4 = COENDS41;
5716 SDC4M3: MODEL DIFSC4 = COTASK41;
5717 SDC4M4: MODEL DIFSC4 = CONORM41;

```

```

5718   SDC4M6:  MODEL DIFSC4 = MIMETI41;
5719
5720   PROC REG DATA=DDIFC5;
5721   SDC5M1:  MODEL DIFSC5 = COBUDG41;
5722   SDC5M2:  MODEL DIFSC5 = COENDS41;
5723   SDC5M3:  MODEL DIFSC5 = COTASK41;
5724   SDC5M4:  MODEL DIFSC5 = CONORM41;
5725   SDC5M6:  MODEL DIFSC5 = MIMETI41;
5726
5727   PROC REG DATA=DDIFC6;
5728   SDC6M1:  MODEL DIFSC6 = COBUDG41;
5729   SDC6M2:  MODEL DIFSC6 = COENDS41;
5730   SDC6M3:  MODEL DIFSC6 = COTASK41;
5731   SDC6M4:  MODEL DIFSC6 = CONORM41;
5732   SDC6M6:  MODEL DIFSC6 = MIMETI41;
5733
5734   PROC REG DATA=DDIFC7;
5735   SDC7M1:  MODEL DIFSC7 = COBUDG41;
5736   SDC7M2:  MODEL DIFSC7 = COENDS41;
5737   SDC7M3:  MODEL DIFSC7 = COTASK41;
5738   SDC7M4:  MODEL DIFSC7 = CONORM41;
5739   SDC7M6:  MODEL DIFSC7 = MIMETI41;
5740
5741   PROC REG DATA=DDIFC8;
5742   SDC8M1:  MODEL DIFSC8 = COBUDG41;
5743   SDC8M2:  MODEL DIFSC8 = COENDS41;
5744   SDC8M3:  MODEL DIFSC8 = COTASK41;
5745   SDC8M4:  MODEL DIFSC8 = CONORM41;
5746   SDC8M6:  MODEL DIFSC8 = MIMETI41;
5747
5748   PROC REG DATA=DDIFC9;
5749   SDC9M1:  MODEL DIFSC9 = COBUDG41;
5750   SDC9M2:  MODEL DIFSC9 = COENDS41;
5751   SDC9M3:  MODEL DIFSC9 = COTASK41;
5752   SDC9M4:  MODEL DIFSC9 = CONORM41;
5753   SDC9M6:  MODEL DIFSC9 = MIMETI41;
5754
5755   PROC REG DATA=DDIFC10;
5756   SDC10M1: MODEL DIFSC10 = COBUDG41;
5757   SDC10M2: MODEL DIFSC10 = COENDS41;
5758   SDC10M3: MODEL DIFSC10 = COTASK41;
5759   SDC10M4: MODEL DIFSC10 = CONORM41;
5760   SDC10M6: MODEL DIFSC10 = MIMETI41;
5761   */
5762
5763   *****RECRUITING DIFF SCORES;
5764

```

NOTE: The data set WORK.DDIFC14 has 41 observations and 357 variables.

NOTE: Compressing data set WORK.DDIFC14 decreased size by 33.33 percent.

Compressed is 4 pages; un-compressed would require 6 pages.

```

5765   DATA DDIFB1; SET ISO46;
5766   IF BA1 > 3;
5767   DIFSB1 = ABS(BA1 - BJ1);
5768

```

NOTE: The data set WORK.DDIFB1 has 21 observations and 357 variables.
NOTE: Compressing data set WORK.DDIFB1 decreased size by 25.00 percent.
Compressed is 3 pages; un-compressed would require 4 pages.

```
5769 DATA DDIFB2; SET ISO46;
5770 IF BA2 > 3;
5771 DIFSB2 = ABS(BA2 - BJ2);
5772
```

NOTE: The data set WORK.DDIFB2 has 41 observations and 357 variables.
NOTE: Compressing data set WORK.DDIFB2 decreased size by 33.33 percent.
Compressed is 4 pages; un-compressed would require 6 pages.

```
5773 DATA DDIFB3; SET ISO46;
5774 IF BA3 > 3;
5775 DIFSB3 = ABS(BA3 - BJ3);
5776
```

NOTE: The data set WORK.DDIFB3 has 33 observations and 357 variables.
NOTE: Compressing data set WORK.DDIFB3 decreased size by 40.00 percent.
Compressed is 3 pages; un-compressed would require 5 pages.

```
5777 DATA DDIFB4; SET ISO46;
5778 IF BA4 > 3;
5779 DIFSB4 = ABS(BA4 - BJ4);
5780
```

NOTE: The data set WORK.DDIFB4 has 31 observations and 357 variables.
NOTE: Compressing data set WORK.DDIFB4 decreased size by 40.00 percent.
Compressed is 3 pages; un-compressed would require 5 pages.

```
5781 DATA DDIFB5; SET ISO46;
5782 IF BA5 > 3;
5783 DIFSB5 = ABS(BA5 - BJ5);
5784
```

NOTE: Missing values were generated as a result of performing an operation on missing values.
Each place is given by: (Number of times) at (Line):(Column).
1 at 5783:11 1 at 5783:19

NOTE: The data set WORK.DDIFB5 has 18 observations and 357 variables.
NOTE: Compressing data set WORK.DDIFB5 decreased size by 0.00 percent.
Compressed is 3 pages; un-compressed would require 3 pages.

```
5785 DATA DDIFB6; SET ISO46;
5786 IF BA6 > 3;
5787 DIFSB6 = ABS(BA6 - BJ6);
5788
```

NOTE: The data set WORK.DDIFB6 has 37 observations and 357 variables.
NOTE: Compressing data set WORK.DDIFB6 decreased size by 40.00 percent.
Compressed is 3 pages; un-compressed would require 5 pages.

```
5789 DATA DDIFB7; SET ISO46;
5790 IF BA7 > 3;
5791 DIFSB7 = ABS(BA7 - BJ7);
5792
```

NOTE: Missing values were generated as a result of performing an operation on missing values.

Each place is given by: (Number of times) at (Line):(Column).

5 at 5791:11 5 at 5791:19

NOTE: The data set WORK.DDIFB7 has 36 observations and 357 variables.

NOTE: Compressing data set WORK.DDIFB7 decreased size by 40.00 percent.

Compressed is 3 pages; un-compressed would require 5 pages.

5793 DATA DDIFB8; SET ISO46;

5794 IF BA8 > 3;

5795 DIFSB8 = ABS(BA8 - BJ8);

5796

NOTE: The data set WORK.DDIFB8 has 13 observations and 357 variables.

NOTE: Compressing data set WORK.DDIFB8 decreased size by 33.33 percent.

Compressed is 2 pages; un-compressed would require 3 pages.

5797 DATA DDIFB9; SET ISO46;

5798 IF BA9 > 3;

5799 DIFSB9 = ABS(BA9 - BJ9);

5800

NOTE: The data set WORK.DDIFB9 has 45 observations and 357 variables.

NOTE: Compressing data set WORK.DDIFB9 decreased size by 33.33 percent.

Compressed is 4 pages; un-compressed would require 6 pages.

5801 DATA DDIFB10; SET ISO46;

5802 IF BA10 > 3;

5803 DIFSB10 = ABS(BA10 - BJ10);

5804

NOTE: The data set WORK.DDIFB10 has 44 observations and 357 variables.

NOTE: Compressing data set WORK.DDIFB10 decreased size by 33.33 percent.

Compressed is 4 pages; un-compressed would require 6 pages.

5805 DATA DDIFB11; SET ISO46;

5806 IF BA11 > 3;

5807 DIFSB11 = ABS(BA11 - BJ11);

5808

NOTE: The data set WORK.DDIFB11 has 43 observations and 357 variables.

NOTE: Compressing data set WORK.DDIFB11 decreased size by 33.33 percent.

Compressed is 4 pages; un-compressed would require 6 pages.

5809 DATA DDIFB12; SET ISO46;

5810 IF BA12 > 3;

5811 DIFSB12 = ABS(BA12 - BJ12);

5812

NOTE: The data set WORK.DDIFB12 has 25 observations and 357 variables.

NOTE: Compressing data set WORK.DDIFB12 decreased size by 25.00 percent.

Compressed is 3 pages; un-compressed would require 4 pages.

5813 DATA DDIFB13; SET ISO46;

5814 IF BA13 > 3;

5815 DIFSB13 = ABS(BA13 - BJ13);

5816

NOTE: The data set WORK.DDIFB13 has 32 observations and 357 variables.
 NOTE: Compressing data set WORK.DDIFB13 decreased size by 40.00 percent.
 Compressed is 3 pages; un-compressed would require 5 pages.

```
5817 DATA DDIFB14; SET ISO46;
5818 IF BA14 > 3;
5819 DIFSB14 = ABS(BA14 - BJ14);
5820
```

NOTE: The data set WORK.DDIFB14 has 34 observations and 357 variables.
 NOTE: Compressing data set WORK.DDIFB14 decreased size by 40.00 percent.
 Compressed is 3 pages; un-compressed would require 5 pages.

```
5821 DATA DDIFB15; SET ISO46;
5822 IF BA15 > 3;
5823 DIFSB15 = ABS(BA15 - BJ15);
5824
5825
5826
5827 /*
5828 PROC PRINT DATA= DDIFB1;
5829 VAR IDNUM DIFSB1 BA1 BJ1;
5830 PROC MEANS N MEAN STD DATA=DDIFB1;
5831 VAR DIFSB1 BA1 BJ1;
5832
5833
5834 PROC PRINT DATA= DDIFB2;
5835 VAR IDNUM DIFSB2 BA2 BJ2;
5836 PROC MEANS N MEAN STD DATA=DDIFB2;
5837 VAR DIFSB2 BA2 BJ2;
5838
5839
5840 PROC PRINT DATA= DDIFB3;
5841 VAR IDNUM DIFSB3 BA3 BJ3;
5842 PROC MEANS N MEAN STD DATA=DDIFB3;
5843 VAR DIFSB3 BA3 BJ3;
5844
5845
5846 PROC PRINT DATA= DDIFB4;
5847 VAR IDNUM DIFSB4 BA4 BJ4;
5848 PROC MEANS N MEAN STD DATA=DDIFB4;
5849 VAR DIFSB4 BA4 BJ4;
5850
5851
5852 PROC PRINT DATA= DDIFB5;
5853 VAR IDNUM DIFSB5 BA5 BJ5;
5854 PROC MEANS N MEAN STD DATA=DDIFB5;
5855 VAR DIFSB5 BA5 BJ5;
5856
5857
5858 PROC PRINT DATA= DDIFB6;
5859 VAR IDNUM DIFSB6 BA6 BJ6;
5860 PROC MEANS N MEAN STD DATA=DDIFB6;
5861 VAR DIFSB6 BA6 BJ6;
5862
5863
5864 PROC PRINT DATA= DDIFB7;
```

```
5865         VAR IDNUM DIFSB7 BA7 BJ7;
5866 PROC MEANS N MEAN STD DATA=DDIFB7;
5867         VAR   DIFSB7 BA7 BJ7;
5868
5869
5870 PROC PRINT DATA=      DDIFB8;
5871         VAR IDNUM DIFSB8 BA8 BJ8;
5872 PROC MEANS N MEAN STD DATA=DDIFB8;
5873         VAR   DIFSB8 BA8 BJ8;
5874
5875
5876 PROC PRINT DATA=      DDIFB9;
5877         VAR IDNUM DIFSB9 BA9 BJ9;
5878 PROC MEANS N MEAN STD DATA=DDIFB9;
5879         VAR   DIFSB9 BA9 BJ9;
5880
5881
5882 PROC PRINT DATA=      DDIFB10;
5883         VAR IDNUM DIFSB10 BA10 BJ10;
5884 PROC MEANS N MEAN STD DATA=DDIFB10;
5885         VAR   DIFSB10 BA10 BJ10;
5886
5887
5888 PROC PRINT DATA=      DDIFB11;
5889         VAR IDNUM DIFSB11 BA11 BJ11;
5890 PROC MEANS N MEAN STD DATA=DDIFB11;
5891         VAR   DIFSB11 BA11 BJ11;
5892
5893
5894 PROC PRINT DATA=      DDIFB12;
5895         VAR IDNUM DIFSB12 BA12 BJ12;
5896 PROC MEANS N MEAN STD DATA=DDIFB12;
5897         VAR   DIFSB12 BA12 BJ12;
5898
5899
5900 PROC PRINT DATA=      DDIFB13;
5901         VAR IDNUM DIFSB13 BA13 BJ13;
5902 PROC MEANS N MEAN STD DATA=DDIFB13;
5903         VAR   DIFSB13 BA13 BJ13;
5904
5905
5906 PROC PRINT DATA=      DDIFB14;
5907         VAR IDNUM DIFSB14 BA14 BJ14;
5908 PROC MEANS N MEAN STD DATA=DDIFB14;
5909         VAR   DIFSB14 BA14 BJ14;
5910
5911 PROC PRINT DATA=      DDIFB15;
5912         VAR IDNUM DIFSB15 BA15 BJ15;
5913 PROC MEANS N MEAN STD DATA=DDIFB15;
5914         VAR   DIFSB15 BA15 BJ15;
5915 */
5916
5917 /*
5918 PROC REG DATA=DDIFB1;
5919 SDB1M1: MODEL DIFSB1 = COBUDG41;
5920 SDB1M2: MODEL DIFSB1 = COENDS41;
5921 SDB1M3: MODEL DIFSB1 = COTASK41;
```

```
5922 SDB1M4: MODEL DIFSP1 = CONORM41;
5923 SDB1M6: MODEL DIFSB1 = MIMETI41;
5924
5925 PROC REG DATA=DDIFB2;
5926 SDB2M1: MODEL DIFSB2 = COBUDG41;
5927 SDB2M2: MODEL DIFSB2 = COENDS41;
5928 SDB2M3: MODEL DIFSB2 = COTASK41;
5929 SDB2M4: MODEL DIFSB2 = CONORM41;
5930 SDB2M5: MODEL DIFSB2 = COERCV41;
5931 SDB2M6: MODEL DIFSB2 = MIMETI41;
5932
5933 PROC REG DATA=DDIFB3;
5934 SDB3M1: MODEL DIFSB3 = COBUDG41;
5935 SDB3M2: MODEL DIFSB3 = COENDS41;
5936 SDB3M3: MODEL DIFSB3 = COTASK41;
5937 SDB3M4: MODEL DIFSB3 = CONORM41;
5938 SDB3M6: MODEL DIFSB3 = MIMETI41;
5939
5940 PROC REG DATA=DDIFB4;
5941 SDB4M1: MODEL DIFSB4 = COBUDG41;
5942 SDB4M2: MODEL DIFSB4 = COENDS41;
5943 SDB4M3: MODEL DIFSB4 = COTASK41;
5944 SDB4M4: MODEL DIFSB4 = CONORM41;
5945 SDB4M6: MODEL DIFSB4 = MIMETI41;
5946
5947 PROC REG DATA=DDIFB5;
5948 SDB5M1: MODEL DIFSB5 = COBUDG41;
5949 SDB5M2: MODEL DIFSB5 = COENDS41;
5950 SDB5M3: MODEL DIFSB5 = COTASK41;
5951 SDB5M4: MODEL DIFSB5 = CONORM41;
5952 SDB5M6: MODEL DIFSB5 = MIMETI41;
5953
5954 PROC REG DATA=DDIFB6;
5955 SDB6M1: MODEL DIFSB6 = COBUDG41;
5956 SDB6M2: MODEL DIFSB6 = COENDS41;
5957 SDB6M3: MODEL DIFSB6 = COTASK41;
5958 SDB6M4: MODEL DIFSB6 = CONORM41;
5959 SDB6M6: MODEL DIFSB6 = MIMETI41;
5960
5961 PROC REG DATA=DDIFB7;
5962 SDB7M1: MODEL DIFSB7 = COBUDG41;
5963 SDB7M2: MODEL DIFSB7 = COENDS41;
5964 SDB7M3: MODEL DIFSB7 = COTASK41;
5965 SDB7M4: MODEL DIFSB7 = CONORM41;
5966 SDB7M6: MODEL DIFSB7 = MIMETI41;
5967
5968 PROC REG DATA=DDIFB8;
5969 SDB8M1: MODEL DIFSB8 = COBUDG41;
5970 SDB8M2: MODEL DIFSB8 = COENDS41;
5971 SDB8M3: MODEL DIFSB8 = COTASK41;
5972 SDB8M4: MODEL DIFSB8 = CONORM41;
5973 SDB8M6: MODEL DIFSB8 = MIMETI41;
5974
5975 PROC REG DATA=DDIFB9;
5976 SDB9M1: MODEL DIFSB9 = COBUDG41;
5977 SDB9M2: MODEL DIFSB9 = COENDS41;
5978 SDB9M3: MODEL DIFSB9 = COTASK41;
```

```

5979 SDB9M4: MODEL DIFSB9 = CONORM41;
5980 SDB9M6: MODEL DIFSB9 = MIMETI41;
5981
5982 PROC REG DATA=DDIFB10;
5983 SDB10M1: MODEL DIFSB10 = COBUDG41;
5984 SDB10M2: MODEL DIFSB10 = COENDS41;
5985 SDB10M3: MODEL DIFSB10 = COTASK41;
5986 SDB10M4: MODEL DIFSB10 = CONORM41;
5987 SDB10M6: MODEL DIFSB10 = MIMETI41;
5988
5989 PROC REG DATA=DDIFB11;
5990 SDB11M1: MODEL DIFSB11 = COBUDG41;
5991 SDB11M2: MODEL DIFSB11 = COENDS41;
5992 SDB11M3: MODEL DIFSB11 = COTASK41;
5993 SDB11M4: MODEL DIFSB11 = CONORM41;
5994 SDB11M6: MODEL DIFSB11 = MIMETI41;
5995
5996 PROC REG DATA=DDIFB12;
5997 SDB12M1: MODEL DIFSB12 = COBUDG41;
5998 SDB12M2: MODEL DIFSB12 = COENDS41;
5999 SDB12M3: MODEL DIFSB12 = COTASK41;
6000 SDB12M4: MODEL DIFSB12 = CONORM41;
6001 SDB12M6: MODEL DIFSB12 = MIMETI41;
6002
6003 PROC REG DATA=DDIFB13;
6004 SDB13M1: MODEL DIFSB13 = COBUDG41;
6005 SDB13M2: MODEL DIFSB13 = COENDS41;
6006 SDB13M3: MODEL DIFSB13 = COTASK41;
6007 SDB13M4: MODEL DIFSB13 = CONORM41;
6008 SDB13M6: MODEL DIFSB13 = MIMETI41;
6009
6010 PROC REG DATA=DDIFB14;
6011 SDB14M1: MODEL DIFSB14 = COBUDG41;
6012 SDB14M2: MODEL DIFSB14 = COENDS41;
6013 SDB14M3: MODEL DIFSB14 = COTASK41;
6014 SDB14M4: MODEL DIFSB14 = CONORM41;
6015 SDB14M6: MODEL DIFSB14 = MIMETI41;
6016
6017 PROC REG DATA=DDIFB15;
6018 SDB15M1: MODEL DIFSB15 = COBUDG41;
6019 SDB15M2: MODEL DIFSB15 = COENDS41;
6020 SDB15M3: MODEL DIFSB15 = COTASK41;
6021 SDB15M4: MODEL DIFSB15 = CONORM41;
6022 SDB15M6: MODEL DIFSB15 = MIMETI41;
6023 */
6024 *****TRAINING DIFF SCORES;
6025

```

NOTE: The data set WORK.DDIFB15 has 38 observations and 357 variables.
NOTE: Compressing data set WORK.DDIFB15 decreased size by 40.00 percent.
Compressed is 3 pages; un-compressed would require 5 pages.

```

6026 DATA DDIFF1; SET ISO46;
6027 IF FA1 > 3;
6028 DIFSF1 = ABS(FA1 - FJ1);
6029

```


NOTE: Missing values were generated as a result of performing an operation on missing values.
 Each place is given by: (Number of times) at (Line):(Column).
 1 at 6028:11 1 at 6028:19

NOTE: The data set WORK.DDIFF1 has 40 observations and 357 variables.
 NOTE: Compressing data set WORK.DDIFF1 decreased size by 20.00 percent.
 Compressed is 4 pages; un-compressed would require 5 pages.

```
6030 DATA DDIFF2; SET ISO46;
6031 IF FA2 > 3;
6032 DIFSF2 = ABS(FA2 - FJ2);
6033
```

NOTE: The data set WORK.DDIFF2 has 35 observations and 357 variables.
 NOTE: Compressing data set WORK.DDIFF2 decreased size by 40.00 percent.
 Compressed is 3 pages; un-compressed would require 5 pages.

```
6034 DATA DDIFF3; SET ISO46;
6035 IF FA3 > 3;
6036 DIFSF3 = ABS(FA3 - FJ3);
6037
```

NOTE: The data set WORK.DDIFF3 has 39 observations and 357 variables.
 NOTE: Compressing data set WORK.DDIFF3 decreased size by 40.00 percent.
 Compressed is 3 pages; un-compressed would require 5 pages.

```
6038 DATA DDIFF4; SET ISO46;
6039 IF FA4 > 3;
6040 DIFSF4 = ABS(FA4 - FJ4);
6041
```

NOTE: Missing values were generated as a result of performing an operation on missing values.
 Each place is given by: (Number of times) at (Line):(Column).
 1 at 6040:11 1 at 6040:19

NOTE: The data set WORK.DDIFF4 has 35 observations and 357 variables.
 NOTE: Compressing data set WORK.DDIFF4 decreased size by 40.00 percent.
 Compressed is 3 pages; un-compressed would require 5 pages.

```
6042 DATA DDIFF5; SET ISO46;
6043 IF FA5 > 3;
6044 DIFSF5 = ABS(FA5 - FJ5);
6045
```

NOTE: Missing values were generated as a result of performing an operation on missing values.
 Each place is given by: (Number of times) at (Line):(Column).
 1 at 6044:11 1 at 6044:19

NOTE: The data set WORK.DDIFF5 has 32 observations and 357 variables.
 NOTE: Compressing data set WORK.DDIFF5 decreased size by 40.00 percent.
 Compressed is 3 pages; un-compressed would require 5 pages.

```
6046 DATA DDIFF6; SET ISO46;
6047 IF FA6 > 3;
6048 DIFSF6 = ABS(FA6 - FJ6);
6049
```

NOTE: The data set WORK.DDIFF6 has 43 observations and 357 variables.
 NOTE: Compressing data set WORK.DDIFF6 decreased size by 33.33 percent.
 Compressed is 4 pages; un-compressed would require 6 pages.

```
6050 DATA DDIFF7; SET ISO46;
6051 IF FA7 > 3;
6052 DIFSF7 = ABS(FA7 - FJ7);
6053
```

NOTE: Missing values were generated as a result of performing an operation on missing values.

Each place is given by: (Number of times) at (Line):(Column).

1 at 6052:11 1 at 6052:19

NOTE: The data set WORK.DDIFF7 has 40 observations and 357 variables.

NOTE: Compressing data set WORK.DDIFF7 decreased size by 20.00 percent.

Compressed is 4 pages; un-compressed would require 5 pages.

```
6054 DATA DDIFF8; SET ISO46;
6055 IF FA8 > 3;
6056 DIFSF8 = ABS(FA8 - FJ8);
6057
```

NOTE: Missing values were generated as a result of performing an operation on missing values.

Each place is given by: (Number of times) at (Line):(Column).

2 at 6056:11 2 at 6056:19

NOTE: The data set WORK.DDIFF8 has 34 observations and 357 variables.

NOTE: Compressing data set WORK.DDIFF8 decreased size by 40.00 percent.

Compressed is 3 pages; un-compressed would require 5 pages.

```
6058 DATA DDIFF9; SET ISO46;
6059 IF FA9 > 3;
6060 DIFSF9 = ABS(FA9 - FJ9);
6061
```

NOTE: The data set WORK.DDIFF9 has 17 observations and 357 variables.

NOTE: Compressing data set WORK.DDIFF9 decreased size by 0.00 percent.

Compressed is 3 pages; un-compressed would require 3 pages.

```
6062 DATA DDIFF10; SET ISO46;
6063 IF FA10 > 3;
6064 DIFSF10 = ABS(FA10 - FJ10);
6065
```

NOTE: The data set WORK.DDIFF10 has 21 observations and 357 variables.

NOTE: Compressing data set WORK.DDIFF10 decreased size by 25.00 percent.

Compressed is 3 pages; un-compressed would require 4 pages.

```
6066 DATA DDIFF11; SET ISO46;
6067 IF FA11 > 3;
6068 DIFSF11 = ABS(FA11 - FJ11);
6069
```

NOTE: The data set WORK.DDIFF11 has 27 observations and 357 variables.

NOTE: Compressing data set WORK.DDIFF11 decreased size by 25.00 percent.

Compressed is 3 pages; un-compressed would require 4 pages.

```
6070 DATA DDIFF12; SET ISO46;
6071 IF FA12 > 3;
6072 DIFSF12 = ABS(FA12 - FJ12);
6073
6074 /*
```

```
6075
6076
6077
6078 PROC PRINT DATA= DDIFF1;
6079     VAR IDNUM DIFSF1 FA1 FJ1;
6080 PROC MEANS N MEAN STD DATA=DDIFF1;
6081     VAR DIFSF1 FA1 FJ1;
6082
6083
6084 PROC PRINT DATA= DDIFF2;
6085     VAR IDNUM DIFSF2 FA2 FJ2;
6086 PROC MEANS N MEAN STD DATA=DDIFF2;
6087     VAR DIFSF2 FA2 FJ2;
6088
6089
6090 PROC PRINT DATA= DDIFF3;
6091     VAR IDNUM DIFSF3 FA3 FJ3;
6092 PROC MEANS N MEAN STD DATA=DDIFF3;
6093     VAR DIFSF3 FA3 FJ3;
6094
6095
6096 PROC PRINT DATA= DDIFF4;
6097     VAR IDNUM DIFSF4 FA4 FJ4;
6098 PROC MEANS N MEAN STD DATA=DDIFF4;
6099     VAR DIFSF4 FA4 FJ4;
6100
6101
6102 PROC PRINT DATA= DDIFF5;
6103     VAR IDNUM DIFSF5 FA5 FJ5;
6104 PROC MEANS N MEAN STD DATA=DDIFF5;
6105     VAR DIFSF5 FA5 FJ5;
6106
6107
6108 PROC PRINT DATA= DDIFF6;
6109     VAR IDNUM DIFSF6 FA6 FJ6;
6110 PROC MEANS N MEAN STD DATA=DDIFF6;
6111     VAR DIFSF6 FA6 FJ6;
6112
6113
6114 PROC PRINT DATA= DDIFF7;
6115     VAR IDNUM DIFSF7 FA7 FJ7;
6116 PROC MEANS N MEAN STD DATA=DDIFF7;
6117     VAR DIFSF7 FA7 FJ7;
6118
6119
6120 PROC PRINT DATA= DDIFF8;
6121     VAR IDNUM DIFSF8 FA8 FJ8;
6122 PROC MEANS N MEAN STD DATA=DDIFF8;
6123     VAR DIFSF8 FA8 FJ8;
6124
6125
6126 PROC PRINT DATA= DDIFF9;
6127     VAR IDNUM DIFSF9 FA9 FJ9;
6128 PROC MEANS N MEAN STD DATA=DDIFF9;
6129     VAR DIFSF9 FA9 FJ9;
6130
6131
```

```
6132 PROC PRINT DATA= DDIF10;
6133 VAR IDNUM DIFSF10 FA10 FJ10;
6134 PROC MEANS N MEAN STD DATA=DDIF10;
6135 VAR DIFSF10 FA10 FJ10;
6136
6137
6138 PROC PRINT DATA= DDIF11;
6139 VAR IDNUM DIFSF11 FA11 FJ11;
6140 PROC MEANS N MEAN STD DATA=DDIF11;
6141 VAR DIFSF11 FA11 FJ11;
6142
6143
6144 PROC PRINT DATA= DDIF12;
6145 VAR IDNUM DIFSF12 FA12 FJ12;
6146 PROC MEANS N MEAN STD DATA=DDIF12;
6147 VAR DIFSF12 FA12 FJ12;
6148
6149
6150 PROC REG DATA=DDIF1;
6151 SDF1M1: MODEL DIFSF1 = COBUDG41;
6152 SDF1M2: MODEL DIFSF1 = COENDS41;
6153 SDF1M3: MODEL DIFSF1 = COTASK41;
6154 SDF1M4: MODEL DIFSF1 = CONORM41;
6155 SDF1M6: MODEL DIFSF1 = MIMETI41;
6156
6157 PROC REG DATA=DDIF2;
6158 SDF2M1: MODEL DIFSF2 = COBUDG41;
6159 SDF2M2: MODEL DIFSF2 = COENDS41;
6160 SDF2M3: MODEL DIFSF2 = COTASK41;
6161 SDF2M4: MODEL DIFSF2 = CONORM41;
6162 SDF2M6: MODEL DIFSF2 = MIMETI41;
6163
6164 PROC REG DATA=DDIF3;
6165 SDF3M1: MODEL DIFSF3 = COBUDG41;
6166 SDF3M2: MODEL DIFSF3 = COENDS41;
6167 SDF3M3: MODEL DIFSF3 = COTASK41;
6168 SDF3M4: MODEL DIFSF3 = CONORM41;
6169 SDF3M6: MODEL DIFSF3 = MIMETI41;
6170
6171 PROC REG DATA=DDIF4;
6172 SDF4M1: MODEL DIFSF4 = COBUDG41;
6173 SDF4M2: MODEL DIFSF4 = COENDS41;
6174 SDF4M3: MODEL DIFSF4 = COTASK41;
6175 SDF4M4: MODEL DIFSF4 = CONORM41;
6176 SDF4M6: MODEL DIFSF4 = MIMETI41;
6177
6178 PROC REG DATA=DDIF5;
6179 SDF5M1: MODEL DIFSF5 = COBUDG41;
6180 SDF5M2: MODEL DIFSF5 = COENDS41;
6181 SDF5M3: MODEL DIFSF5 = COTASK41;
6182 SDF5M4: MODEL DIFSF5 = CONORM41;
6183 SDF5M6: MODEL DIFSF5 = MIMETI41;
6184
6185 PROC REG DATA=DDIF6;
6186 SDF6M1: MODEL DIFSF6 = COBUDG41;
6187 SDF6M2: MODEL DIFSF6 = COENDS41;
6188 SDF6M3: MODEL DIFSF6 = COTASK41;
```

```

6189 SDF6M4: MODEL DIFSF6 = CONORM41;
6190 SDF6M6: MODEL DIFSF6 = MIMETI41;
6191
6192 PROC REG DATA=DDIFF7;
6193 SDF7M1: MODEL DIFSF7 = COBUDG41;
6194 SDF7M2: MODEL DIFSF7 = COENDS41;
6195 SDF7M3: MODEL DIFSF7 = COTASK41;
6196 SDF7M4: MODEL DIFSF7 = CONORM41;
6197 SDF7M6: MODEL DIFSF7 = MIMETI41;
6198
6199 PROC REG DATA=DDIFF8;
6200 SDF8M1: MODEL DIFSF8 = COBUDG41;
6201 SDF8M2: MODEL DIFSF8 = COENDS41;
6202 SDF8M3: MODEL DIFSF8 = COTASK41;
6203 SDF8M4: MODEL DIFSF8 = CONORM41;
6204 SDF8M6: MODEL DIFSF8 = MIMETI41;
6205
6206 PROC REG DATA=DDIFF9;
6207 SDF9M1: MODEL DIFSF9 = COBUDG41;
6208 SDF9M2: MODEL DIFSF9 = COENDS41;
6209 SDF9M3: MODEL DIFSF9 = COTASK41;
6210 SDF9M4: MODEL DIFSF9 = CONORM41;
6211 SDF9M6: MODEL DIFSF9 = MIMETI41;
6212
6213 PROC REG DATA=DDIFF10;
6214 SDF10M1: MODEL DIFSF10 = COBUDG41;
6215 SDF10M2: MODEL DIFSF10 = COENDS41;
6216 SDF10M3: MODEL DIFSF10 = COTASK41;
6217 SDF10M4: MODEL DIFSF10 = CONORM41;
6218 SDF10M6: MODEL DIFSF10 = MIMETI41;
6219
6220 PROC REG DATA=DDIFF11;
6221 SDF11M1: MODEL DIFSF11 = COBUDG41;
6222 SDF11M2: MODEL DIFSF11 = COENDS41;
6223 SDF11M3: MODEL DIFSF11 = COTASK41;
6224 SDF11M4: MODEL DIFSF11 = CONORM41;
6225 SDF11M6: MODEL DIFSF11 = MIMETI41;
6226
6227 PROC REG DATA=DDIFF12;
6228 SDF12M1: MODEL DIFSF12 = COBUDG41;
6229 SDF12M2: MODEL DIFSF12 = COENDS41;
6230 SDF12M3: MODEL DIFSF12 = COTASK41;
6231 SDF12M4: MODEL DIFSF12 = CONORM41;
6232 SDF12M6: MODEL DIFSF12 = MIMETI41;
6233
6234
6235 PROC REG DATA=DDIFC6;
6236 SD2C6M1: MODEL DIFSC6 = COTASK41 COBUDG41 /TOL; TEST COBUDG41=0;
6237 SD2C6M2: MODEL DIFSC6 = COTASK41 COENDS41 /TOL; TEST COENDS41=0;
6238 SD2C6M3: MODEL DIFSC6 = COTASK41 COBUD41 COENDS41 /TOL;
6239 TEST COENDS41=0
6240 PROC REG DATA=DDIFF5;
6241 SD2F5M2: MODEL DIFSF5 = COTASK41 COENDS41 /TOL; TEST COTASK41=0;
6242
6243 PROC REG DATA=DDIFF7;
6244 SD2F7M2: MODEL DIFSF7 = COTASK41 COENDS41 /TOL; TEST COENDS41=0;
6245

```

```
6246 PROC REG DATA=DDIFF8;
6247 SD2F8M2: MODEL DIFS8 = CONORM41 COENDS41 /TOL; TEST CONORM41=0;
6248 */
6249 *****CORRELATIONS;
6250 /*
6251 PROC CORR DATA=DDIFB1 NOSIMPLE;
6252 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6253 WITH DIFSB1;
6254
6255 PROC CORR DATA=DDIFB2 NOSIMPLE;
6256 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6257 WITH DIFSB2;
6258
6259 PROC CORR DATA=DDIFB3 NOSIMPLE;
6260 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6261 WITH DIFSB3;
6262
6263 PROC CORR DATA=DDIFB4 NOSIMPLE;
6264 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6265 WITH DIFSB4;
6266
6267 PROC CORR DATA=DDIFB4 NOSIMPLE;
6268 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6269 WITH DIFSB4;
6270
6271
6272 PROC CORR DATA=DDIFB5 NOSIMPLE;
6273 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6274 WITH DIFSB5;
6275
6276 PROC CORR DATA=DDIFB6 NOSIMPLE;
6277 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6278 WITH DIFSB6;
6279
6280 PROC CORR DATA=DDIFB7 NOSIMPLE;
6281 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6282 WITH DIFSB7;
6283
6284 PROC CORR DATA=DDIFB8 NOSIMPLE;
6285 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6286 WITH DIFSB8;
6287
6288 PROC CORR DATA=DDIFC1 NOSIMPLE;
6289 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6290 WITH DIFSC1;
6291
6292 PROC CORR DATA=DDIFC2 NOSIMPLE;
6293 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6294 WITH DIFSC2;
6295
6296 PROC CORR DATA=DDIFC3 NOSIMPLE;
6297 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6298 WITH DIFSC3;
6299
6300 PROC CORR DATA=DDIFC4 NOSIMPLE;
6301 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6302 WITH DIFSC4;
```

```
6303
6304 PROC CORR DATA=DDIFC4 NOSIMPLE;
6305 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6306 WITH DIFSC4;
6307
6308
6309 PROC CORR DATA=DDIFC5 NOSIMPLE;
6310 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6311 WITH DIFSC5;
6312
6313 PROC CORR DATA=DDIFC6 NOSIMPLE;
6314 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6315 WITH DIFSC6;
6316
6317 PROC CORR DATA=DDIFC7 NOSIMPLE;
6318 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6319 WITH DIFSC7;
6320
6321 PROC CORR DATA=DDIFC8 NOSIMPLE;
6322 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6323 WITH DIFSC8;
6324
6325 PROC CORR DATA=DDIFC9 NOSIMPLE;
6326 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6327 WITH DIFSC9;
6328
6329 PROC CORR DATA=DDIFC10 NOSIMPLE;
6330 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6331 WITH DIFSC10;
6332
6333 PROC CORR DATA=DDIFF1 NOSIMPLE;
6334 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6335 WITH DIFSF1;
6336
6337 PROC CORR DATA=DDIFF2 NOSIMPLE;
6338 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6339 WITH DIFSF2;
6340
6341 PROC CORR DATA=DDIFF3 NOSIMPLE;
6342 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6343 WITH DIFSF3;
6344
6345 PROC CORR DATA=DDIFF4 NOSIMPLE;
6346 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6347 WITH DIFSF4;
6348
6349 PROC CORR DATA=DDIFF5 NOSIMPLE;
6350 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6351 WITH DIFSF5;
6352
6353 PROC CORR DATA=DDIFF6 NOSIMPLE;
6354 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6355 WITH DIFSF6;
6356
6357 PROC CORR DATA=DDIFF7 NOSIMPLE;
6358 VAR BUDG41 ENDS41 TASK41 NGRM41 MIMET41;
6359 WITH DIFSF7;
```

```

6360
6361 PROC CORR DATA=DDIFF8 NOSIMPLE;
6362 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6363 WITH DIFSF8;
6364
6365 PROC CORR DATA=DDIFF9 NOSIMPLE;
6366 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6367 WITH DIFSF9;
6368
6369 PROC CORR DATA=DDIFF10 NOSIMPLE;
6370 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6371 WITH DIFSF10;
6372
6373 PROC CORR DATA=DDIFF11 NOSIMPLE;
6374 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6375 WITH DIFSF11;
6376
6377 PROC CORR DATA=DDIFF12 NOSIMPLE;
6378 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6379 WITH DIFSF12;
6380
6381
6382 PROC CORR DATA=DDIFC6 NOSIMPLE;
6383 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6384 WITH DIFSC6;
6385
6386 PROC CORR DATA=DDIFF6 NOSIMPLE;
6387 VAR BUDG41 ENDS41 TASK41 NORM41 MIMET41;
6388 WITH DIFSF6;
6389 */
6390 *****RECRUITING;
6391 /*
6392 PROC REG DATA= DDIFB1;
6393 SDB1M1: MODEL DIFSB1 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6394 SDB1M2: MODEL DIFSB1 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6395 SDB1M3: MODEL DIFSB1 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6396 SDB1M4: MODEL DIFSB1 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6397 SDB1M5: MODEL DIFSB1 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6398 SDB1M6: MODEL DIFSB1 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6399
6400 PROC REG DATA=DDIFB2;
6401 SDB2M1: MODEL DIFSB2 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6402 SDB2M2: MODEL DIFSB2 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6403 SDB2M3: MODEL DIFSB2 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6404 SDB2M4: MODEL DIFSB2 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6405 SDB2M5: MODEL DIFSB2 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6406 SDB2M6: MODEL DIFSB2 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6407
6408 PROC REG DATA= DDIFB3;
6409 SDB3M1: MODEL DIFSB3 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6410 SDB3M2: MODEL DIFSB3 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6411 SDB3M3: MODEL DIFSB3 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6412 SDB3M4: MODEL DIFSB3 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6413 SDB3M5: MODEL DIFSB3 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6414 SDB3M6: MODEL DIFSB3 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6415
6416 PROC REG DATA= DDIFB4;

```



```
6417 SDB4M1: MODEL DIFSB4 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6418 SDB4M2: MODEL DIFSB4 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6419 SDB4M3: MODEL DIFSB4 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6420 SDB4M4: MODEL DIFSB4 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6421 SDB4M6: MODEL DIFSB4 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6422
6423 PROC REG DATA= DDIFB5;
6424 SDB5M1: MODEL DIFSB5 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6425 SDB5M2: MODEL DIFSB5 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6426 SDB5M3: MODEL DIFSB5 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6427 SDB5M4: MODEL DIFSB5 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6428 SDB5M5: MODEL DIFSB5 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6429 SDB5M6: MODEL DIFSB5 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6430
6431 PROC REG DATA= DDIFB6;
6432 SDB6M1: MODEL DIFSB6 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6433 SDB6M2: MODEL DIFSB6 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6434 SDB6M3: MODEL DIFSB6 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6435 SDB6M4: MODEL DIFSB6 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6436 SDB6M5: MODEL DIFSB6 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6437 SDB6M6: MODEL DIFSB6 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6438
6439 PROC REG DATA= DDIFB7;
6440 SDB7M1: MODEL DIFSB7 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6441 SDB7M2: MODEL DIFSB7 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6442 SDB7M3: MODEL DIFSB7 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6443 SDB7M4: MODEL DIFSB7 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6444 SDB7M5: MODEL DIFSB7 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6445 SDB7M6: MODEL DIFSB7 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6446
6447 PROC REG DATA= DDIFB8;
6448 SDB8M1: MODEL DIFSB8 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6449 SDB8M2: MODEL DIFSB8 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6450 SDB8M3: MODEL DIFSB8 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6451 SDB8M4: MODEL DIFSB8 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6452 SDB8M5: MODEL DIFSB8 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6453 SDB8M6: MODEL DIFSB8 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6454
6455
6456 *****PERFORMANCE APPRAISAL;
6457
6458 PROC REG DATA= DDIFC1;
6459 SDC1M1: MODEL DIFSC1 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6460 SDC1M2: MODEL DIFSC1 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6461 SDC1M3: MODEL DIFSC1 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6462 SDC1M4: MODEL DIFSC1 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6463 SDC1M5: MODEL DIFSC1 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6464 SDC1M6: MODEL DIFSC1 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6465
6466 PROC REG DATA= DDIFC2;
6467 SDC2M1: MODEL DIFSC2 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6468 SDC2M2: MODEL DIFSC2 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6469 SDC2M3: MODEL DIFSC2 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6470 SDC2M4: MODEL DIFSC2 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6471 SDC2M5: MODEL DIFSC2 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6472 SDC2M6: MODEL DIFSC2 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6473
```

```
6474 PROC REG DATA= DDIFC3;
6475 SDC3M1: MODEL DIFSC3 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6476 SDC3M2: MODEL DIFSC3 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6477 SDC3M3: MODEL DIFSC3 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6478 SDC3M4: MODEL DIFSC3 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6479 SDC3M5: MODEL DIFSC3 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6480 SDC3M6: MODEL DIFSC3 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6481
6482 PROC REG DATA= DDIFC4;
6483 SDC4M1: MODEL DIFSC4 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6484 SDC4M2: MODEL DIFSC4 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6485 SDC4M3: MODEL DIFSC4 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6486 SDC4M4: MODEL DIFSC4 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6487 SDC4M6: MODEL DIFSC4 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6488
6489 PROC REG DATA= DDIFC5;
6490 SDC5M1: MODEL DIFSC5 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6491 SDC5M2: MODEL DIFSC5 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6492 SDC5M3: MODEL DIFSC5 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6493 SDC5M4: MODEL DIFSC5 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6494 SDC5M5: MODEL DIFSC5 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6495 SDC5M6: MODEL DIFSC5 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6496
6497 PROC REG DATA= DDIFC6;
6498 SDC6M1: MODEL DIFSC6 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6499 SDC6M2: MODEL DIFSC6 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6500 SDC6M3: MODEL DIFSC6 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6501 SDC6M4: MODEL DIFSC6 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6502 SDC6M6: MODEL DIFSC6 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6503
6504 PROC REG DATA= DDIFC7;
6505 SDC7M1: MODEL DIFSC7 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6506 SDC7M2: MODEL DIFSC7 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6507 SDC7M3: MODEL DIFSC7 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6508 SDC7M4: MODEL DIFSC7 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6509 SDC7M5: MODEL DIFSC7 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6510 SDC7M6: MODEL DIFSC7 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6511
6512 PROC REG DATA= DDIFC8;
6513 SDC8M1: MODEL DIFSC8 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6514 SDC8M2: MODEL DIFSC8 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6515 SDC8M3: MODEL DIFSC8 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6516 SDC8M4: MODEL DIFSC8 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6517 SDC8M6: MODEL DIFSC8 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6518
6519 PROC REG DATA= DDIFC9;
6520 SDC9M1: MODEL DIFSC9 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6521 SDC9M2: MODEL DIFSC9 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6522 SDC9M3: MODEL DIFSC9 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6523 SDC9M4: MODEL DIFSC9 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6524 SDC9M5: MODEL DIFSC9 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6525 SDC9M6: MODEL DIFSC9 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6526
6527 PROC REG DATA= DDIFC10;
6528 SDC10M1: MODEL DIFSC10 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6529 SDC10M2: MODEL DIFSC10 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6530 SDC10M3: MODEL DIFSC10 = CVAR41 TASK41/TOL; TEST CVAR41=0;
```

```
6531 SDC10M4: MODEL DIFSC10 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6532 SDC10M5: MODEL DIFSC10 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6533 SDC10M6: MODEL DIFSC10 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6534
6535 *****TRAINING;
6536
6537
6538 PROC REG DATA= DDIFF1;
6539 SDF1M1: MODEL DIFSF1 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6540 SDF1M2: MODEL DIFSF1 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6541 SDF1M3: MODEL DIFSF1 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6542 SDF1M4: MODEL DIFSF1 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6543 SDF1M6: MODEL DIFSF1 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6544 SDF1M6: MODEL DIFSF1 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6545
6546 PROC REG DATA= DDIFF2;
6547 SDF2M1: MODEL DIFSF2 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6548 SDF2M2: MODEL DIFSF2 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6549 SDF2M3: MODEL DIFSF2 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6550 SDF2M4: MODEL DIFSF2 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6551 SDF2M5: MODEL DIFSF2 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6552 SDF2M6: MODEL DIFSF2 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6553
6554 PROC REG DATA= DDIFF3;
6555 SDF3M1: MODEL DIFSF3 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6556 SDF3M2: MODEL DIFSF3 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6557 SDF3M3: MODEL DIFSF3 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6558 SDF3M4: MODEL DIFSF3 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6559 SDF3M5: MODEL DIFSF3 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6560 SDF3M6: MODEL DIFSF3 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6561
6562 PROC REG DATA= DDIFF4;
6563 SDF4M1: MODEL DIFSF4 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6564 SDF4M2: MODEL DIFSF4 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6565 SDF4M3: MODEL DIFSF4 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6566 SDF4M4: MODEL DIFSF4 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6567 SDF4M5: MODEL DIFSF4 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6568 SDF4M6: MODEL DIFSF4 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6569
6570 PROC REG DATA= DDIFF5;
6571 SDF5M1: MODEL DIFSF5 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6572 SDF5M2: MODEL DIFSF5 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6573 SDF5M3: MODEL DIFSF5 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6574 SDF5M4: MODEL DIFSF5 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6575 SDF5M5: MODEL DIFSF5 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6576 SDF5M6: MODEL DIFSF5 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6577
6578 PROC REG DATA= DDIFF6;
6579 SDF6M1: MODEL DIFSF6 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6580 SDF6M2: MODEL DIFSF6 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6581 SDF6M3: MODEL DIFSF6 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6582 SDF6M4: MODEL DIFSF6 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6583 SDF6M6: MODEL DIFSF6 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6584
6585 PROC REG DATA= DDIFF7;
6586 SDF7M1: MODEL DIFSF7 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6587 SDF7M2: MODEL DIFSF7 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
```

```
6588 SDF7M3: MODEL DIFSF7 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6589 SDF7M4: MODEL DIFSF7 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6590 SDF7M5: MODEL DIFSF7 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6591 SDF7M6: MODEL DIFSF7 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6592
6593 PROC REG DATA= DDIFF8;
6594 SDF8M1: MODEL DIFSF8 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6595 SDF8M2: MODEL DIFSF8 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6596 SDF8M3: MODEL DIFSF8 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6597 SDF8M4: MODEL DIFSF8 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6598 SDF8M5: MODEL DIFSF8 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6599 SDF8M6: MODEL DIFSF8 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6600
6601 PROC REG DATA= DDIFF9;
6602 SDF9M1: MODEL DIFSF9 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6603 SDF9M2: MODEL DIFSF9 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6604 SDF9M3: MODEL DIFSF9 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6605 SDF9M4: MODEL DIFSF9 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6606 SDF9M5: MODEL DIFSF9 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6607 SDF9M6: MODEL DIFSF9 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6608
6609 PROC REG DATA= DDIFF10;
6610 SDF10M1: MODEL DIFSF10 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6611 SDF10M2: MODEL DIFSF10 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6612 SDF10M3: MODEL DIFSF10 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6613 SDF10M4: MODEL DIFSF10 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6614 SDF10M5: MODEL DIFSF10 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6615 SDF10M6: MODEL DIFSF10 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6616
6617 PROC REG DATA= DDIFF11;
6618 SDF11M1: MODEL DIFSF11 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6619 SDF11M2: MODEL DIFSF11 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6620 SDF11M3: MODEL DIFSF11 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6621 SDF11M4: MODEL DIFSF11 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6622 SDF11M5: MODEL DIFSF11 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6623 SDF11M6: MODEL DIFSF11 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6624
6625 PROC REG DATA= DDIFF12;
6626 SDF12M1: MODEL DIFSF12 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6627 SDF12M2: MODEL DIFSF12 = CVAR41 ENDS41/TOL; TEST CVAR41=0;
6628 SDF12M3: MODEL DIFSF12 = CVAR41 TASK41/TOL; TEST CVAR41=0;
6629 SDF12M4: MODEL DIFSF12 = CVAR41 NORM41/TOL; TEST CVAR41=0;
6630 SDF12M5: MODEL DIFSF12 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6631 SDF12M6: MODEL DIFSF12 = CVAR41 MIMET41/TOL; TEST CVAR41=0;
6632
6633
6634
6635 PROC REG DATA= DDIFB1;
6636 SDB1M5: MODEL DIFSB1 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6637 PROC REG DATA= DDIFB2;
6638 SDB2M5: MODEL DIFSB2 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6639 PROC REG DATA= DDIFB3;
6640 SDB3M5: MODEL DIFSB3 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6641 PROC REG DATA= DDIFB4;
6642 SDB4M6: MODEL DIFSB4 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6643 PROC REG DATA= DDIFB5;
6644 SDB5M5: MODEL DIFSB5 = CVAR41 RULES41/TOL; TEST CVAR41=0;
```

```
6645 PROC REG DATA= DDIFB6;
6646 SDB6M5: MODEL DIFSB6 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6647 PROC REG DATA= DDIFB7;
6648 SDB7M5: MODEL DIFSB7 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6649 PROC REG DATA= DDIFB8;
6650 SDB8M5: MODEL DIFSB8 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6651 PROC REG DATA= DDIFC1;
6652 SDC1M5: MODEL DIFSC1 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6653 PROC REG DATA= DDIFC2;
6654 SDC2M5: MODEL DIFSC2 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6655 PROC REG DATA= DDIFC3;
6656 SDC2M5: MODEL DIFSC3 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6657 PROC REG DATA= DDIFC4;
6658 SDB8M5: MODEL DIFSC4 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6659 PROC REG DATA= DDIFC5;
6660 SDC3M5: MODEL DIFSC5 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6661 PROC REG DATA= DDIFC6;
6662 SDC4M6: MODEL DIFSC6 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6663 PROC REG DATA= DDIFCC7
6664 SDC5M5: MODEL DIFSC7 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6665 PROC REG DATA= DDIFC8
6666 SDC8M6: MODEL DIFSC8 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6667 PROC REG DATA= DDIFC9;
6668 SDC9M5: MODEL DIFSC9 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6669 PROC REG DATA= DDIFC10;
6670 SDC1M5: MODEL DIFSC10 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6671 PROC REG DATA= DDIF1;
6672 SDF1M6: MODEL DIFSF1 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6673 PROC REG DATA= DDIF2;
6674 SDF2M5: MODEL DIFSF2 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6675 PROC REG DATA= DDIF3;
6676 SDF3M5: MODEL DIFSF3 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6677 PROC REG DATA= DDIF4;
6678 SDF4M5: MODEL DIFSF4 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6679 PROC REG DATA= DDIF5;
6680 SDF5M5: MODEL DIFSF5 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6681 PROC REG DATA= DDIF6;
6682 SDF6M6: MODEL DIFSF6 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6683 PROC REG DATA= DDIF7;
6684 SDF7M5: MODEL DIFSF7 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6685 PROC REG DATA= DDIF8;
6686 SDF8M5: MODEL DIFSF8 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6687 PROC REG DATA= DDIF9;
6688 SDF9M5: MODEL DIFSF9 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6689 PROC REG DATA= DDIF10;
6690 SDF10M5: MODEL DIFSF10 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6691 PROC REG DATA= DDIF11;
6692 SDF11M5: MODEL DIFSF11 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6693 PROC REG DATA= DDIF12;
6694 SDF12M5: MODEL DIFSF12 = CVAR41 RULES41/TOL; TEST CVAR41=0;
6695
6696
6697 PROC REG DATA= DDIFB1;
6698 SDB1M5: MODEL DIFSB1 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6699 PROC REG DATA= DDIFB2;
6700 SDB2M5: MODEL DIFSB2 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6701 PROC REG DATA= DDIFB3;
```

6702 SDB3M5: MODEL DIFSB3 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6703 PROC REG DATA= DDIFB4;
6704 SDB4M6: MODEL DIFSB4 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6705 PROC REG DATA= DDIFB5;
6706 SDB5M5: MODEL DIFSB5 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6707 PROC REG DATA= DDIFB6;
6708 SDB6M5: MODEL DIFSB6 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6709 PROC REG DATA= DDIFB7;
6710 SDB7M5: MODEL DIFSB7 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6711 PROC REG DATA= DDIFB8;
6712 SDB8M5: MODEL DIFSB8 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6713 PROC REG DATA= DDIFC1;
6714 SDC1M5: MODEL DIFSC1 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6715 PROC REG DATA= DDIFC2;
6716 SDC2M5: MODEL DIFSC2 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6717 PROC REG DATA= DDIFC3;
6718 SDC2M5: MODEL DIFSC3 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6719 PROC REG DATA= DDIFC4;
6720 SDB8M5: MODEL DIFSC4 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6721 PROC REG DATA= DDIFC5;
6722 SDC3M5: MODEL DIFSC5 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6723 PROC REG DATA= DDIFC6;
6724 SDC4M6: MODEL DIFSC6 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6725 PROC REG DATA= DDIFC7;
6726 SDC5M5: MODEL DIFSC7 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6727 PROC REG DATA= DDIFC8;
6728 SDC8M6: MODEL DIFSC8 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6729 PROC REG DATA= DDIFC9;
6730 SDC9M5: MODEL DIFSC9 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6731 PROC REG DATA= DDIFC10;
6732 SDC1M5: MODEL DIFSC10 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6733 PROC REG DATA= DDIFF1;
6734 SDF1M6: MODEL DIFSF1 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6735 PROC REG DATA= DDIFF2;
6736 SDF2M5: MODEL DIFSF2 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6737 PROC REG DATA= DDIFF3;
6738 SDF3M5: MODEL DIFSF3 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6739 PROC REG DATA= DDIFF4;
6740 SDF4M5: MODEL DIFSF4 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6741 PROC REG DATA= DDIFF5;
6742 SDF5M5: MODEL DIFSF5 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6743 PROC REG DATA= DDIFF6;
6744 SDF6M6: MODEL DIFSF6 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6745 PROC REG DATA= DDIFF7;
6746 SDF7M5: MODEL DIFSF7 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6747 PROC REG DATA= DDIFF8;
6748 SDF8M5: MODEL DIFSF8 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6749 PROC REG DATA= DDIFF9;
6750 SDF9M5: MODEL DIFSF9 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6751 PROC REG DATA= DDIFF10;
6752 SDF10M5: MODEL DIFSF10 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6753 PROC REG DATA= DDIFF11;
6754 SDF11M5: MODEL DIFSF11 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6755 PROC REG DATA= DDIFF12;
6756 SDF12M5: MODEL DIFSF12 = CVAR41 BUDG41/TOL; TEST CVAR41=0;
6757 */

NOTE: Missing values were generated as a result of performing an operation on missing values.

Each place is given by: (Number of times) at (Line):(Column).

2 at 6072:12 2 at 6072:21

NOTE: The data set WORK.DDIFF12 has 30 observations and 357 variables.

NOTE: Compressing data set WORK.DDIFF12 decreased size by 40.00 percent.

Compressed is 3 pages; un-compressed would require 5 pages.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414