The Corporate Centre in Japanese Management: An Analysis of its Size from an Information-Processing Perspective

A thesis submitted to the University of Manchester for the degree of Doctor of Business Administration in the Faculty of Business Administration

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Abstract

THE UNIVERSITY OF MANCHESTER

ABSTRACT OF THESIS submitted by Kimio Kase

for the Degree of Doctor of Business Administration and entitled "the Corporate Centre in Japanese Management: An Analysis of its Size from an Information-Processing Perspective"

Month and Year of Submission:

This thesis addresses the relationship between the size of the corporate centre, and the information-processing needs and capability resulting from vertical and horizontal information flows in Japanese firms.

It is contended that the corporate centre discharges the functions of planning and allocation of resources, control of performance, and central service provision. Of these three, the corporate centre uses planning and control functions to manage the organisation. Planning and control functions are found to be closely related to the vertical information flow.

A review of the literature on Japanese management demonstrates that Japanese firms are equipped with elements facilitating the creation of horizontal information flow. Linkages among divisions such as shared clients, production technology, etc., are discussed to determine the horizontal information flow. It is held that the horizontal information flow reflected in linkages is associated with the centralisation of administration.

The propositions and hypotheses derived from the foregoing argument have been empirically tested on the basis of fifty-five valid responses to the mail questionnaire. These fifty-five Japanese firms represent eight manufacturing industries.

The results obtained by multivariate analysis techniques, mainly, multiple regression analysis, indicate that vertical information, as measured in terms of planning and control influences, is not associated with the size of the corporate centre, whereas horizontal information flow as measured in terms of linkages, is significantly associated with it. The total number of employees and the number of divisional and corporate functions are found to be associated with the size of the corporate centre, as well. Japanese firms are also found to exert both high planning and high control influences to lower management, irrespective of industries.

Declaration

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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Dedication

To Mercedes and my mother and

to the loving memory of Gabriel and my father.

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T Higashira of Price Waterhouse reviewed the translation of the questionnaire in Japanese. Three Japanese managers test-answered it. They include T Katsuta of Toshiba Corporation, K Kawaguchi of Taisho Pharmaceutical and T Yoshioka of Nissan Motor. Likewise, H Ikebe, I Inoue and K Motomura, all of whom are the second year MBA students at Manchester Business school test-answered the questionnaire. Additional measure of acknowledgement is due to John Sharp, who helped me to improve my writing in English.

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CHAPTER 1: INTRODUCTION

1. 1. Corporate Centre and its Size

It is commonly held that excessive overheads[1] in terms of staff should be avoided as they result in lower efficiency and performance. They mean complex systems and structures. As the number of overhead people increases arithmetically, the number of possible interactions among them increases geometrically. To cope with the complex communication needs generated by the size of overheads, complex systems are required (Peters and Waterman, 1982).

As a consequence, the organisation becomes paralysed, because the complex structure not only makes priorities less clear, but also automatically dilutes them. This leads to tardiness in responding to fast-changing conditions in the environment and the issues posed by the omnipresent existence of convoluted conditions. Every important strategy decision must go through several reviews. Middle management tends to stop ideas coming down and going up. Staff at the corporate centre tend to be in the home office checking on things rather than in the field solving problems.

Excessive overheads also mean higher indirect costs. Both the service and manufacturing sectors in Japan have 15 to 20 per cent excess

[1]Overheads are "expenses arising from management, office supplies, interest on borrowed capital, etc., as distinct from business transactions (The Concise Oxford Dictionary of Current English, Sixth Edition: 785)".

white-collar work force (Hori, 1993). Traditionally, excess white-collar costs were subsidised by blue-collar labour productivity growth. Recently, however, the blue-collar subsidy to white-collar costs has been weakening on account of the levelling-out of productivity growth and of the appreciation of the yen, which drives production offshore[2] (Hori, 1993).

The issue of overheads has also been linked to corporate centre organisation, which comprises top management, planning and control staff, special staff like personnel, purchasing and accounting, and marketing staff. Peters and Waterman (1982) argue that the 'excellent' companies they studied have comparatively few people at the corporate level. The corporate centres of these companies have shed all the main functions, including product development, finance and personnel to lower management levels. Simplicity of form and lean staff at the corporate centre are concomitant in 'excellent' companies (Peter and Waterman, 1982).

However, in analysing whether there is excess in corporate personnel it is necessary to assess what value the corporate centre adds to the firm. Lorenz (1993) warns against the current trend in corporate management to cut the central personnel on the sheer ground that their services can be contracted out and the assumption that the resultant gain to the corporate centre by its down-sizing is always in the interests of shareholders. He asserts that indiscriminate

[2]The yen rose from ¥252/$1 at the beginning of 1985 to ¥125/$1 by the end of 1988. In June, 1994 the exchange rate is ¥101/$1.

streamlining of the corporate centre and its staff might be the best way to create confusion.

That it is unwise to "streamline" the corporate centre is supported by Japanese experience. There has always been a large staff at Japanese firms' corporate centre, regardless of whether the organisational structure is functional or divisional (Kono, 1984). The approximate number of employees in the corporate centre is, in the case of Toyota — 4000, Matsushita — 2000, Hitachi — 2000, Canon — 1500, whereas the corporate centres of ICI and GEC of UK accommodate only about 100 persons, and GE, Lockheed, and Northrop of USA may have fewer than 300 people in the corporate centre (Kono, 1984). The average number employed at the corporate centre in Japanese firms is approximately 1000 persons, and the average percentage of the total number of employees is about 9 per cent according to the survey of forty-four Japanese manufacturing companies carried out by Kono in 1982 (Kono, 1984)[3].

Moreover, this situation has been further accentuated in recent years (Morikawa, 1993). Japan's industries, for example, electronics, automobiles, semiconductors, telecommunications, and so on, have strengthened their corporate and headquarters functions. Between 1984 and 1992 these industries saw overhead expenses—sales, general and administrative expenses—increase on average from less than 14 per cent of sales to 17 per cent (Hori, 1993). The average number of

[3]In this survey, the average size of the corporate centre was 638, and 9.1 per cent of the total employees.

board members in Japanese firms increased from around 10 in 1954 to 20 in 1975. In some firms such as Nippon Steel or Mitsui & Co., the number of board members is as high as fifty people (Morikawa, 1993).

The foregoing argument may suggest that the overhead costs would make the Japanese profit margin lower than that in the West. However, Brown *et al* (1993) contend that the profit margin does not differ significantly between US and Japan. They found that Japanese firms have a higher percentage of cost of goods sold, which appears to be consistent with a low pricing strategy to achieve high market share. The lower percentage of selling and administrative expense for Japan offsets its higher percentage of cost of goods sold and equalises its profit margin with US companies (See Table 1. 1.). Japanese companies do not disaggregate selling and administrative expenses further, which prevents additional insights into their lower expenses. Brown *et al* (1993) surmise that the Japanese emphasis on human resources (open communications, work groups, consultative decision making) increases employee trust and reduces the need for elaborate control systems and their related costs. Thus, Japanese firms disagree with the commonly held conception of oversized staffing and the assumption that the value added by the corporate centre to the company management does not compensate for the cost it involves.

Table 1. 1.: Mean financial statement ratios for US and Japanese companies for fiscal years 1985 to 1988

.	US	Japan
COST OF GOODS SOLD/SALES (%)	0.65	0.75*
SELLING & ADMIN. EXP./SALES (%)	0.28	0.19*
PROFIT MARGIN (%)	3.2	3.3

Note: An asterisk to the right of the mean Japanese ratio indicates the level of significance (p = .01) at which it differs from the mean US ratio.
Source: Adapted from Brown *et al* (1994: 78)

Some authors have argued that the size of the corporate centre is positively associated with information-processing needs and capabilities (Haleblian and Finkelstein, 1993). Information-processing in an organisation is defined as including the gathering of data, the transformation of data into information, and the communication and storage of information in the organisation (Galbraith, 1973; Tushman and Nadler, 1978). Information-processing needs arise when there is an information gap, which means the difference between the amount of information required to perform the task and the amount of information already possessed by the organisation (Tushman and Nadler, 1978). Galbraith (1973) argues that information-processing capabilities relate to vertical and horizontal information flows, and that they depend on the educational level of the human resources, the management process employed in the organisation and the infrastructure (*e.g.*, IT, MIS) through which this information is communicated.

Information-processing needs are related to the intensity of the corporate centre's intervention in decision-making processes in lower management (which might be called vertical information flow) and to the extent of cross-business co-ordination (which might be called horizontal information flow). This means that there should be a significant relationship between the size of the corporate centre and the vertical or horizontal information exchange between it and lower management[4].

Therefore, it is necessary to investigate how information flows. This is seen in the way the corporate centre interacts with lower management (the vertical information flow), and the way it organises the organisational overlaps or "linkages" (which are, for example, shared clients, common product development, shared production technology, etc.) relating to the horizontal information flow. Unless value in the form of information-processing is added to company management by the corporate centre in this interaction and organisation, the corporate centre may be small.

Thus the focus of this research is directed to the relationship between the information flows (vertical and horizontal) and the size of the corporate centre.

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[4]There are several essential issues in the above relationship existing between information flow and the size of the corporate centre. Technology, location and environment variables (Child, 1973), organisational interdependence (Aiken and Hage, 1968), work characteristics and sub-unit communication (Tushman, 1979), qualifications of personnel (Blau, 1968), corporate linkages (Boyd, 1990), etc. have all been studied as factors influencing organisation structures and size.

1. 2. Layout of this Thesis

To address the central issue of this research, namely, the relationship between the size of the centre and vertical and horizontal information flows, the later chapters are organised as follows:

Chapter 2 reviews literature on organisation in search of factors influencing organisation, especially the size of the corporate centre. Information-processing is identified as a key factor influencing the size of the corporate centre.

Chapter 3 discusses the relationship between the size of the corporate centre and the vertical information flow. That information flow links the corporate centre and lower management.

Chapter 4 complements the foregoing discussion and addresses the relationship between the size of the corporate centre and the horizontal and inter-divisional or inter-departmental information flow in Japanese firms.

Chapter 5 identifies the issues for the research and specifies them as four hypotheses, for the testing of which an empirical survey has been conducted on the basis of a mail questionnaire to major Japanese manufacturing firms.

Chapter 6 sets out the design and the methodology of the research. It describes in detail the type of research, the population, sampling frame, sample size, procedures for the gathering of data, instruments of data gathering, scales for measurement of variables, techniques for analysing the data, and the limitations of the methodology used.

Chapter 7 provides a statistical analysis of the data, and furnishes the findings of the study and discussion. Wherever possible, reference is made to the connection of the results of the research with the existing literature.

Chapter 8 submits the conclusions and implications for both academics and practising managers. Limitations of the research are also mentioned.

1. 3. Justification of the Central Issue in This Research

Holden and Burgess (1994: 4) note:

> Japanese management practice, no matter how poorly understood in other countries, has become a universal byword for innovation, product quality, excellence in manufacturing and harmonious industrial relations.

Therefore, this research addresses Japanese management practice with a focus , as shown in the foregoing lay-out, upon the strategic management of Japanese firms in relation to their organisational design, with strategic management defined as the formulation,

implementation, and evaluation of managerial actions that enhance the value of a business enterprise (Teece, 1990).

Based on the argument in Section 1. 1, the research attempts to explain the relationship between information flows and the size of the corporate centre. It should be pointed out, however, that in formulating this "functionalist" relationship between the two variables, namely, information flows and the size of the corporate centre, alternative approaches for their explanation are not excluded.

These approaches relate to wider and sociological aspects of organisational behaviour such as political process, social constructions and dysfunctional uses of bureaucracy (Child, 1973b). They are discussed in the literature review in Chapters 3 and 4, and in Chapter 8. Two limitations that the approaches to these wider aspects imply for this research may be pointed out.

First, the secretive nature of Japanese firms makes the gathering of the information on them difficult. Section 6. 4, shows the reasons given by Japanese firms for declining to answer the questionnaire for this research.

The second limitation refers to the lack of objective measurements of the wider aspects of organisational behaviour. In consequence, a limited number of case studies or secondary data will be looked for. They will help us to understand the dynamic process at the corporate centre of Japanese firms reflecting a larger institutional environment

which constrains Japanese management. This will be treated in Sections 7. 5. and 8. 3.

The focus of this research on Japanese management in relation to the size of the corporate centre and information flows may be justified on three grounds. First, despite the importance of the corporate centre in strategic management, there are few accepted theories of, and even less empirical research on, the corporate centre. Questions such as what the distinctive tasks of the centre are in strategic management and how the corporate centre relates to lower level management remain relatively unapproached by researchers. Techniques like those of portfolio planning are used in some firms (Haspeslagh, 1982), but are regarded, at best, as a useful aid rather than as a complete guide. There seems to have been little research on the corporate centre which has proved of practical value to senior managers (Goold and Campbell, 1987).

Some of the few researchers who have investigated the issues related to the corporate centre are Chandler, Williamson, and Goold and Campbell. Chandler (1962) studied both the emergence of divisional structure and the corporate centre detached from daily operations and essentially engaged in strategy formulation. Williamson (1975) argued that the corporate centre carries out functions that cannot be done as efficiently by the capital market. Goold and Campbell (1987) have focused their attention on two aspects of the role played by the corporate centre. The first connected with planning and allocating resources sets policy as a framework for guiding co-ordination and

operating decisions, appraising plans, and appraising resource requests. The second controls and audits performance.

Second, Japanese corporate centres have a large staff compared with their counterparts in US firms. However, as argued by Brown *et al* (1993), the overall performance of Japanese firms is not impaired by the seemingly heavy load of indirect staff at the corporate centre. The centre adds value to company management which compensates for its cost. It is therefore interesting to study what factors influence the size of the corporate centre and how the centre contributes value. Thus, in delving into the empirical aspect of the size of the corporate centre in Japanese firms, the research seeks to provide some useful guidance for the organisational design for practising managers.

Third, in the face of today's intense competition on business organisations, firms seek drastic improvement in their key processes through process innovation (Davenport, 1993) or process re-engineering (Hammer, 1990). Japanese firms discovered and implemented process management long before the West, and it has enabled firms in a number of industries to develop efficient processes in key areas (Davenport, 1993). As processes and information flow are closely linked (Davenport, 1993), this research may help us to understand the implications of process innovation for the organisational design.

Likewise, the information flow perspective of this research may cast some light on the growing awareness in the strategic management literature that strategy formation is an emergent process (Mintzberg,

1990a, 1990b), since Kagono *et al* (1985) contend that the strategy formation in Japanese firms is process-based and, therefore, hinges on information flows.

However, for the gathering and processing of these information flows "contextual" skills, namely, familiarity with the firm's way of doing business, are required. This fact must make it difficult for Japanese firms to "internationalise" their management structure and to transfer their production technology, like lean production technology, to their overseas operations.

In summary, from the viewpoint of practising managers, regarding the centre's size and information flows the questions begging to be addressed are:

- why the Japanese corporate centre is large;
- what value the centre adds to compensate for its cost;
- what elements corporate restructuring should take into account;
- what the difficulties could be for Japanese firms' internationalisation process; and
- what could be the difficulties for the transfer of lean production technology.

They will be addressed in Chapter 8, based on the results of the research.

With regard to the characteristics of the research, suffice it to say that, rather than being exploratory or descriptive (Green and Tull, 1978;

Bailey, 1982), it seeks to propose causal relationships formulated as hypotheses. The empirical evidence for such causal relationships has been sought by means of a mail questionnaire sent to the corporate centres of 385 Japanese firms in Japan.

CHAPTER 2: INFORMATION-PROCESSING AND THE SIZE OF THE CORPORATE CENTRE

2. 1. Introduction

The preceding chapter identified the starting point of this research and defined its purpose. It attempts to analyse the factors influencing the size of the corporate centre (top management, planning and control staff, personnel, purchasing, accounting, etc., in the central organisation) in Japanese firms. It seeks to explicate the relationship between information flows resulting from the way the corporate centre manages the firm, and the size of the corporate centre.

Chapters 2, 3, and 4 examine existing literature. The first step in this chapter reviews organisation theory in search of explanations regarding the factors influencing organisation structure, especially the size of the corporate centre. The contingency approach is adopted as a point of departure. Criticism of contingency theory and alternative explanations are reviewed. Information-processing is deemed to be a contingent factor influencing the size of the corporate centre. Thereafter, in Chapter 3, there is a review of what authors have researched and written about the corporate centre and the vertical information flow. Taken in conjunction with the analysis contained in Chapter 4 on the horizontal information flow, this provides a solid basis for advancing to the identification of research issues in Chapter 5.

This chapter is divided into five sections. These revolve around the search for the factors influencing organisation structure, especially the size of the corporate centre.

Section 2. 2 examines different approaches to organisations within the context of historical framework. Two large groups of approaches are studied. First, classical management theory is reviewed. It includes administrative theory, scientific management, the structuralist school, and neo-classical management and organisational theory. This last includes the human relations school and the behavioural school. Second, modern management and organisation theory is reviewed. Management science and systems theory are studied in this category.

As an outgrowth from systems theory, contingency theory is reviewed in Section 2. 3. Its representative works are examined. Criticisms of contingency theory are discussed. Relevance of the theory to this study is analysed in the light of (1) the testability of the statements based on contingency theory and, therefore, its appropriateness for empirical studies, and (2) the applicability of its results for practising managers.

Contingent factors influencing organisational structure in general and the size of the corporate centre in particular are examined in Section 2. 4. It examines the need for information-processing as a factor influencing organisation structure and the size of the corporate centre. Theories on communications process are reviewed in relation to information-processing need.

Section 2. 5 summarises the discussion in Chapter 2.

2. 2. Examination of Different Approaches to Organisation: a Historical Framework for the Study of Organisation

Organisation theory is "the body of thinking and writing which addresses itself to the problem of how to organise. More specifically, it is the study of the structure, functioning and performance of organisations and the behaviour of groups and individuals within them." (Pugh, 1984: 9)

Organisation theory considers the behaviour of individuals, but in the aggregate. It is distinct from organisation behaviour, which is the micro approach to organisations, because the latter focuses on the individuals within organisations as the relevant units of analysis. Organisation behaviour examines concepts such as motivation, leadership style, and personality and is concerned with cognitive and emotional differences among people within organisations (Daft, 1995). The focus of the dissertation is on organisation theory.

The development of organisation theory and practice can be analysed by examining the evolution of society as it has passed from an agrarian through an industrial to a post-industrial structure. The rationale underlying this historical perspective emerges from an area of study within sociology referred to as the *sociology of knowledge*. This field study holds that various theories and explanations of the world are in some measure social products that

are influenced by wider cultural, economic, and technological forces (Bowditch and Buono, 1994).

Figure 2. 1. summarises the evolution of management and organisation theory.

Figure 2. 1.: Evolution of management and organisation theory

Period	1800s	1880-1930	1930-1960	1960s	1970-1990s
Nature of society	Agrarian	Industrial			Post-industrial
Locus of work	Farm/home	Factory			Office
Nature of work	Physical: agriculture/crafts	Physical: manufacturing		Social: services	Abstract: computer mediated
Management and organisation theory	Prescientific	Classical Administrative Theory Scientific Management Structuralists	Neoclassical Human Relations Behavioural	Modern Management Science	Systems Theory Contingency Theory
Focus of management control	Patterns of physical movement and precise ways of performing work		Patterns of social interaction		Patterns of attention
Role of management	Control of employee behaviour		Maintain employee social system		Facilitate employee development

Source: Adapted from Bowditch and Buono (1990:8)

2. 2. 1. Classical management

Towards the end of the nineteenth century and into the beginning of the twentieth, the social, economic, and technological environment began to create the necessary conditions for the systematic study of management. An Industrial Revolution, initiated by the inventions and technological improvements of the eighteenth century, led to

changes not only in the work role, but in the very nature of our society as well. Conceptually, such industrialisation occurs through two basic stages: (1) the development of an industrial infrastructure and (2) the creation of a capital goods sector. Essentially, an *industrial infrastructure* consists of such things as (a) nation-wide systems of transport, (b) sources of relatively cheap power, *e.g.*, coal and oil, (c) technological innovations (such as cotton gin and the steam engine), (d) modern communication systems, (e) networks of financial institutions, (f) preparation of the labour force through education and technical training (Etzioni, 1980).

The process of industrialisation changed the nature of work from farming and crafts to more complex forms of manufacturing and working with machines. It also led to the urbanisation of our society as the industrial process transferred the locus of work from the farm and the rural home to the factory and the city. As plants and factories were built in centralised locations, people began to migrate from rural areas to where the "new" jobs were located. Immigrants created urban enclaves in areas near the factories as well. As a result, the business firms and complex division of labour which evolved from this transition further prompted efforts to study seriously these new forms of organisation and their management.

The Classical school of management and organisation theory which evolved during this period was, thus, influenced by the wider social, economic, and technological forces that precipitated the transition from an agrarian to an industrial society. The dominant set of assumptions about human nature characterised people as rational, economic beings who would act to maximise their own self-interest.

Correspondingly, the focus on management practice which emerged dealt with how these new forms of industrial organisation could be structured, how work could be delegated and co-ordinated, and how people within these organisational structures could be motivated.

Administrative theory

One of the major orientations within the Classical school is referred to as Administrative Theory or the Universal Principles school of management. Based on deductive reasoning, this group examined certain forms of organisation, such as the church and the military, and concluded that there were basic dimensions of organisational structure and characteristics of management that were common to *all* organisations.

Fayol (1949) identified five basic functions of management: planning, organising, commanding, co-ordinating, and controlling. Based on these functions, he described how management should be carried out in 14 management principles which included:

(1) Division of work. This principle refers to the specialisation of tasks, and control of the number of objects under each worker or manager to improve effectiveness and efficiency.
(2) Authority and responsibility. This tenet gives the person in authority the right to give orders and the power to obtain obedience. Responsibility emerges directly from authority.
(3) Unity of command. This principle states that no one should have more than one boss.

(4) Remuneration. This principle specifies that pay should be fair and satisfactory to the employer and employee. No one should be under or over rewarded.

(5) *Esprit de corps*. This tenet proposes that morale and good feelings about the organisation are enhanced by effective face-to-face communication and team cohesiveness.

The focus of the Administrative Theory school was on the formal structure of organisations, and their top and middle management. The orientation was authoritarian, and posited one best way to approach all organisational and managerial problems. Employees were basically viewed as extensions of the organisation's structure and machinery.

Scientific management

In contrast to the emphasis on principles of organisation and management, the Scientific Management school focused on the measurement and structure of work itself. The aim of this approach was to create the most effective way to carry out work tasks (Taylor, 1987). Since people were viewed as rational economic beings, it was reasoned that they would act on their own interests (and subsequently the organisation's) if they understood "correct" work procedures and were rewarded for following them.

As practised by Taylor and his followers, Scientific Management focused on existing manufacturing and work procedures, improving and standardising them, while concurrently attempting to conserve

resources (Bowditch and Buono, 1994). His emphasis was that the real way to increase output was to "work smarter," not necessarily harder. By understanding the nature of jobs — to be deduced from study and analysis — the process of work could be made more effective. He did, however, have the needs of the individual worker at heart. In fact, he would refuse to take a factory as a client unless the owners agreed first to raise wages, sometimes even tripling them (Peterson, 1990). The four basic tenets of Scientific Management are:

(1) Develop the one best way to do each job.

(2) Select the best individual for the position.

(3) Ensure that work be carried out in prescribed fashion through training and by increasing wages for those workers who follow correct procedures.

(4) Divide work efforts among employees so that activities such as planning, organising, and controlling are the prime responsibilities of managers rather than of individual workers.

Although Taylor (1987) felt strongly that management rather than workers should choose the methods of carrying out organisational tasks, the basic dimensions of Scientific Management discussed above were qualified by an *exception principle*. Once output standards and routine work procedures were defined through the use of the scientific method and precise measurement, management should give its attention only to situation where standards or procedures were not within those norms.

In numerous instances, the gains and profits that emerged from Taylor's (1987) system were impressive; in others, such as the attempt to apply these principles to reform naval manufacturing, his efforts were deemed a failure. In these latter situations, however, the lack of success has been attributed to internal political battles, resistance to shifts in power, and a lack of incentives to become more efficient rather than Taylor's principles *per se* (Peterson, 1990).

Other developments from the Scientific Management school include Gilbreth's (1912) time and motion studies. Based on the principles of economy of motion, the Gilbreths took an analytic approach which measured body motions to discover the most efficient way to carry out a particular task. Henry Gantt, who, like Taylor, was interested in production efficiency, was another contributor to this school (Wren, 1979). In contrast to Taylor, Gantt focused on devising remuneration procedures that would provide fair pay for correctly doing the task and a bonus for completing it in a timely fashion (Wren, 1979). His main contribution is a production scheduling aid referred to as the Gantt chart, a way of plotting work in progress against the calendar.

Structuralist school

In contrast to the deductive approach taken by the Universalists in their study of organisations and management, the Structuralist school used an inductive approach in its study of organisations. Rather than creating a conceptual model of an organisational structure and then generalising to all organisations, members of

this school examined many different organisations to determine empirically the common structural elements which could characterise how organisations actually operate.

Weber (1975) empirically discovered those basic aspects that characterised an ideal type of organisation, or what he referred to as a bureaucracy:

(1) Rules and procedures control organisational functions.
(2) A high degree of differentiation exists between organisational functions.
(3) Organisation of offices is hierarchically determined; no sub-unit is allowed to "drift," and each sub-unit reports directly to one higher-level office.
(4) An emphasis is placed on prescribed rules or established norms that regulate behaviour.
(5) Ownership and administration of an organisation are separate — the president does not own the company, the dean does not own the college.
(6) An administrator must not be able to control position or the "trappings" of an office.
(7) All administrative acts are recorded in writing.

Although Weber acknowledged that not all organisations were pure bureaucracies, it is clear that he thought bureaucracies were preferable to other forms of organisations. To Weber (1975), bureaucracy was one of the most characteristic and ubiquitous forms of administration in modern society. It was efficient, it consisted of (needed) specialists and experts, and since it dealt with

people on an impersonal basis it ensured that rules would be applied consistently in all situations.

Etzioni (1964) summarises Structuralists attempts to synthesise the classical and the human relations schools. It is in exploring the "harmony" view of the human relations writers that the Structuralist writers first recognise fully the organisation dilemma: the inevitable strains (1) between organisational needs and personal needs (2) between rationality and non-rationality, (3) between discipline and autonomy, (4) between formal and informal relations, (5) between management and workers, and (6) between ranks and divisions. The Structuralists see the organisation as a large, complex social unit in which social groups may interact. While these groups share some interests, they have other, incompatible interests. The various groups might co-operate in some spheres and compete in others, but they are not and could hardly become one big happy family as the human relations writers often imply. Their view is much in line with Weick's (1979) idea about designing the organisation to reduce uncertainty.

Although there were differences in the manner in which the Universalists and the Structuralists created their models of organisation, there are many aspects common to both. Overall, as an initial attempt to create a theory of organisation and management, Classical theory was a significant advance.

Classical theory advanced by such authors as Barnard (1938) and Urwick (1952) emphasised limited and prescribed communication channels, detailed role description and authoritative leadership

styles. The organisations in the classical theory coincide with the mechanistic organisations described by Burns and Stalker (1961). Mechanistic organisations break down the problems and tasks into "specialisms"; somebody at the top is responsible for seeing that one person's work is relevant to that of others, while the technical methods, duties and powers attached to each post are precisely defined (Burns, 1963). Burns and Stalker, however, contend that there are mechanistic and organic organisations.

While it is generally recognised today that Classical theory does not include important aspects of human behaviour and environmental influences on organisations and their management, the understanding of formal functions and structures that it provides is still an important part of our understanding of the visible and tangible aspects of organisations. The problem is that Classical theory fails to explain why there are differences in organisations.

While Classical management and organisation theory provides relevant insights into the nature of organisation, the value of the theory is limited by its rather narrow focus on the formal anatomy of the firm.

Neo-classical management and organisational theory

As early as the 1920s, a number of social critics began to point out the potentially harmful effects of trying to standardise people as well as jobs. Although many of the basic tenets of classical organisation and management theory (such as structure and stability, division of labour, and task specialisation) were not directly challenged, criticism was focused on those individual managers and theorists who appeared to treat employees as little more than mere appendages to machines (Koontz, 1961; Miles, 1975; Schein, 1980). When Taylor (1987) proposed his theory of Scientific Management, his work was met with antagonism and hostility. He defended his principles on the basis of a "mental revolution" that would take place in the attitudes of management and labour in which both sides would recognise the need for co-operation, and the importance of scientific investigation (rather than individual judgement and opinion) as the basis for structuring work assignments. Others, however, argued that while management might seek to standardise skills and methods, it could not expect perfectly standard, emotionless behaviour from its employees.

Studies during this period also began to draw attention to the possibility that co-workers could exert a greater influence on work behaviour than economic incentives offered by management. The recognition that workers had social needs led to a new set of assumptions about human nature. Rather than viewing people as rational and economic creatures, social considerations were now seen as the prime motivator of human behaviour and work performance. Since the mechanisation of work during the Industrial

Revolution stripped jobs of much of their intrinsic meaning, people sought out meaning in their work through social relationships on the job. Management, it was argued, must therefore help people to satisfy these natural desires. Although these arguments may appear to be somewhat moralistic, they were tied to prescriptions for organisational effectiveness and efficiency. If managers did not respond to these socially oriented needs with greater consideration and warmth, lagging work performance and resistance to authority were viewed as likely outcomes.

In an attempt to compensate for the neglect of human interaction in the Classical school, Neo-classical theory introduced the behavioural sciences into management thought. The underlying rationale was that since management involves getting things done with and through people, the study of management must be centred on understanding inter-personal relations. Overall, the Neo-classical school of thought can be viewed as a critique of the Classical doctrine (Scott, 1961).

1. Each organisation should have a *structure*; however, human behaviour can disrupt the most carefully planned organisational activities. While the formal structure may represent how things are supposed to occur, the informal organisation which emerges in response to people's social needs dictates how things are actually done.

2. Although *division of labour* might make sense from the organisation's standpoint, some of the unintended outcomes

for workers are feelings of isolation and anonymity due to insignificant jobs.

3. While the scalar and functional principles might be theoretically valid, they deteriorate in practice due to the way in which these processes are carried out (*e.g.*, insufficient delegation, overlapping authority, gaps in authority).

4. Finally, a manager's *span of control* is a function of human factors and cannot be reduced to a precise, universally applicable ratio.

There are two main sources of Neo-classical theory: (1) the sociologists and social psychologists who were concerned with interaction and relations within groups, often referred to as the Human Relations school, and (2) the psychologists who focused on individual behaviour, or the Behavioural school.

Human relations school

The basic tenets of the Human Relations school (approximately 1930-1950) emerged from a group of studies during the mid-1920s and early 1930s known as the "Hawthorne Experiments". Based on the Classical theory tradition, these experiments were conducted in Western Electric's Hawthorn plant to assess the effect of working conditions on productivity (Miles, 1975; Schein, 1980). A number of related studies were undertaken which varied such aspects of the work environment as lighting, rest periods, length of the work day, and other facets of the work environment (Mayo, 1987).

Much to the surprise of the researchers, they found that, regardless of the group's productivity, output per worker increased. Since the conditions under which these individuals accomplished the work efforts did not explain the change in productivity, the researchers were forced to look at other factors in the work place. One observation was that, during the experiments, members of the work group had developed high morale which seemed positively to influence their job performance. Further analysis revealed three basic underlying factors which created the group's high morale:

1. The workers perceived themselves as "special" and important to management, because they were singled out for this research role.
2. The women developed good interpersonal relationships with each other and their supervisor, because they had

considerable autonomy or freedom to decide their own division of the work and their own work place.

3. The social contact and easy relations which emerged in the group created a generally pleasant work environment.

Based on these preliminary findings, the researchers hypothesised that the nature of *social relations* among members of a work group, and between employees and their supervisor was an influential motivator of work performance in terms of both productivity and quality of work. In an effort to test this hypothesis, another group of studies was conducted in which three small groups of men who worked on switchboard equipment were studied to assess the relative effects of a complex wage-incentive plan. The researchers found that production norms — or standards which the group created for itself — were more powerful determinants of production than wage incentives. The workers established an implied norm of what was a "fair day's work", and those who over-produced or under-produced ("one must not be a 'rate-buster' or a 'chiseller'") were brought into line (Mayo, 1987). These findings, as well as a number of other research efforts, confirmed the importance of the work group and pointed to the existence of an *informal organisation* within a firm's formal structure.

Over time these studies were popularised by a number of interpretations of the research itself and its implications for management. The Hawthorne Studies marked a significant turning point in the evolution of management theory, because they introduced a new way of thinking about people in organisations. It is not that the earlier scientific management theorists — Taylor (1987),

Gilbreths (1912), Gantt — misunderstood the human factor; workers were a factor, but they never held centre stage in this body of work (Greenwood and Wrege, 1986).

Human relations theory points to the need to understand workers as human beings if they are to become organisation members. Social processes which surround the formal management system — namely, the informal organisation which is part of every organisation's infrastructure — are emphasised (Mayo, 1977; Roethlisberger and Dickson, 1939). Human relations theory also approaches organisation problems as a universal prescription for all situations and all organisations.

It is important to point out that the Hawthorne Studies and the emergence of the Human Relations school were not without their critics. A number of questions concerning research methodology and the way in which the experiment's outcomes were interpreted surfaced early on and linger to this day (Sykes, 1965). Even the basic rationale and intent of the experiments have been viewed with a degree of scepticism. For instance, the United Auto Workers quoted by Baritz (1960) was quite critical of the Hawthorne project:

> At Hawthorne, Ma Bell, when she wasn't organising company unions, allowed Professor Mayo to carry out experiments with a group of women workers for some nine years...For these nine years about every kind of experiment a very bright Harvard professor could think of was tried on the women. Everything you do to white mice was done to them, except their spines and skulls were not split so the fluid could be analysed...What did make them produce and produce and produce with ever-increasing speed was the expression of interest in their personal problems by the supervisor; interviews by psychiatrically trained social workers and (later on) the way they were paired off with friendly or unfriendly co-

> workers...Now obviously this is the greatest discovery since J.P. Morgan learned that you can increase profits by organising a monopoly, suppressing competition, raising prices and reducing production.

Such criticism, however, became submerged in the overwhelming support that was given to the Human Relations school. The emerging set of beliefs held that management could not treat people as if they were mere extensions of an organisation's structure and machinery (Miles, 1975; Schein, 1980).

Behavioural school

As an outgrowth of the interest in the Human Relations school and the focus on people *within* the work group, a growing number of theorists began to shift their attention to the individual and the nature of work itself (Miles, 1975; Schein, 1980; Bowditch and Buono, 1994). Beginning with the Neo-classical assumption that work had lost its meaning through the mechanisation accompanying the Industrial Revolution, this new school of thought argued that workers had become alienated from their work, because their jobs prevented them from fully using their skills and capabilities. While these theorists agreed that people had needs for acceptance, status, and recognition, they went beyond the human relations perspective and proposed that workers also wanted to gain personal satisfaction from their jobs by developing their abilities (and themselves) in the accomplishment of meaningful and worthwhile work (Daft, 1995).

The basic assumption underlying human behaviour were now perceived to be oriented towards personal growth, accomplishment, and inner development. If managers were to become truly effective, it was argued, they must go beyond simply providing fair pay and treatment and attempt to make organisational members feel important. In the interest of effective and efficient organisational performance, managers should develop jobs and organisational structures that allowed people an opportunity to develop their abilities and to experience personal growth (Bowditch and Buono, 1994).

This perspective is often referred to as the Behavioural school. It was developed during the early 1950s and was based on the work of such theorists as Maslow (1987), McGregor (1987), Likert (1987), Argyris (1987), Herzberg (1987), and McClelland (1987). There has been a continual development of the Behavioural perspective and it remains one of the bases of much management and supervisory education today. It can be viewed as a bridge between traditional Neo-classical theory and many of our contemporary analyses of management and organisation theory.

In summary, the Neo-classical school argues that there is a dimension of organisational reality that is not contained in the formal, structural orientation of the Classical school — the behaviour of groups and individuals within the organisation. The insights of the Neo-classical doctrine thus add to our understanding of the complexity of organisations. It has been criticised, however, for not integrating the varied facets of human behaviour which occur in organisations and, like the Classical school, for being short-

sighted and incomplete (Scott, 1961). Moreover, while the Neo-classical school began to realise that organisations were affected by a wider range of forces than previously thought, its view of relevant environmental forces is quite narrow by today's standard (Bowditch and Buono, 1994).

2. 2. 2. Modern management and organisation theory

Contemporary or "Modern" management and organisation theory is different from both the Classical and Neo-classical schools in that it emphasises conceptualisation and analysis, relies heavily on empirical research, and, perhaps most importantly, attempts to integrate the various elements that contribute to the whole organisation (Scott, 1961). The underlying theme is that organisations are systems composed of mutually interrelated and interdependent variables. This is not to suggest, however, that modern theory is a unified body of thought. Indeed, different theorists and researchers have their own particular emphases on what they consider an organisational system, or the more influential components of that system. The common thread is the attempt to analyse organisations in their totality (Bowditch and Buono, 1994).

The development of modern management and organisation theory has been influenced by a number of social, political, economic, and technological changes in the larger society. Many social observers, for example, argue that another transition from an industrial to a *post-industrial society* has begun, similar to the transitions society underwent when it evolved from an agrarian to industrial structure

(Bell, 1973). In contrast to the agriculturally and industrially based societies of earlier periods, post-industrial society is characterised by the following dimensions (Bell, 1973):

1. A basic shift in the orientation of the labour force from goods-producing to services-rendering/information-processing
2. A gradual and steady rise in the influence of professional and technical occupations
3. A growing influence and centrality of theoretical knowledge as the source of innovation and policy formulation for society
4. An increased need for the planning and control of technology and its growth
5. An emergence of mass integrated computer systems that will create a new "intellectual technology".

Although there is still some debate concerning whether our society is actually developing the type of post-industrial structure envisaged by such authors as Bell (1973), Little (1973) and Hill (1974), it is becoming clear that society is undergoing a transformation that will re-arrange the industrial and economic structure (Reich, 1991). For example, although routine production-type jobs are still found in high technology as well as in traditional, heavy industries, this type of work is increasingly being robotised and automated to the point where it currently constitutes only about 25 per cent of the US employment base. At the same time, while the high-level, symbolic and analytic-type service jobs — for instance, research scientists, design engineers, investment bankers, financial consultants, marketing strategists, and corporate planners — that prophets of the so-called information age predicted would transform the working

world have emerged, a far larger proportion of the US labour force has been relegated to lower level, in-person service jobs. These latter jobs involve the direct delivery of person-to-person services such as retail sales, hotel workers, waiters and waitresses, cashiers, home cleaning services, taxi drivers, and security guards. Combined with a general "flattening" of organisational structures, such shifts raise significant questions about our approaches to management and organisation (Bowditch and Buono, 1994).

In addition to the rapid and often volatile technological changes envisaged by post-industrialism, organisations are also confronted with myriad pressures that include: (1) growing competition in the world arena; (2) government regulations which have increasingly dealt with social controversies (such as equal opportunity, work-place safety, environmental protection); (3) resource scarcity; (4) increased labour-force diversity; (5) changing cultural norms; and (6) the more traditional business pressures from competitors, suppliers and supply and demand forces. Moreover, the growing influence of a number of new stakeholders — public interest groups, environmentalists, local community advocacy groups, consumer advocates, and so forth — further emphasises the expanding demands and expectations that are being placed on business firms today. Modern management and organisation theory acknowledges these demands and focuses on the organisation within its environment and the congruence or fit of organisational sub-systems within that larger mosaic (Daft, 1995).

As the complexity of organisational environments began to dawn on social scientists, they began to challenge many of the basic

assumptions underlying human nature. The move towards increased empirical research produced inconsistent support for many of the generalised concepts (Bowditch and Buono, 1994). In other words, while these general theories were supported in some studies, other research efforts produced different results. The major impact of these trends has been the move towards more complicated models of human nature and the resultant implications about how to manage these individuals. A set of complex assumptions about people began to emerge (Schein, 1980).

1. Human needs fall into many categories and vary according to the individual's stage of development and total life situation.
2. Since needs and motives interact to form complex motivation patterns, it must be realised that for different people the same object or outcome (*e.g.*, money) can vary in importance and fulfil quite different needs.
3. People are capable of learning new motives through organisational experiences.
4. The same individual may display different needs in different organisations or in different groups within the same organisation.
5. Employees can become productively involved with organisations on the basis of many different types of motives.
6. Organisational members can respond to different kinds of managerial strategies, depending on their own motives and abilities and the nature of the task.

This shift in our underlying assumptions influenced a similar shift in the ways in which the focus and role of management are perceived. It is important to point out, however, that the fundamental tasks of management have remained essentially the same: (1) to ensure that people are capable of joint performance through common goals and values, (2) to create the "right" structure to facilitate such interaction, and (3) to provide a sufficient level of training and development to ensure that organisational members can perform and respond to organisational and environmental changes (Drucker, 1989).

The broad changes discussed above have influenced a number of developments in management and organisation theory: (1) the emergence of Management Science and Operational Research, which emphasises the use of computers and mathematical models in organisational decision making; (2) the development of Systems theory, which looks at the organisation and its environment in totality; (3) the birth of Contingency theory which takes a situational (rather than a one-best-way) view of organisational structure and managerial activity; and (4) the growing influence of Organisational Behaviour which has, for many, become almost synonymous with management (Bowditch and Buono, 1994).

Management science

The basic orientation of the Management Science school is to apply quantitative techniques to management and organisational problems, and to merge strategic concern for planning and

forecasting with administrative concern for organisational objectives and goal accomplishment. Although there were some earlier developments in the use of statistical theory and quantitative methods in business organisations, most people identify Word War II as the starting point of Management Science. During this period, the first "operational research" team (the analytic profession within Management Science) was used to develop a plan to enable the British to deploy their aircraft efficiently, while at the same time providing effective air reconnaissance against Nazi convoys in the English Channel and surrounding waters (Chase and Prentis, 1987). The approach uses quantitative models representing actual conditions and computers for simulations and calculations to facilitate decisions which were previously made almost solely by judgement and experience. Thus, by calculating the speeds and patterns followed by enemy ships, and the time and fuel required by its aircraft to cover a given sector, the Allied commanders were able to reduce the number of reconnaissance flights needed and actually increase the effectiveness of their surveillance efforts (Churchman, Ackoff and Arnoff, 1957).

Following the war, the late 1940s and 1950s saw the development of numerous mathematical techniques — ranging from queuing theory and mathematical programming to game theory — that have become a basic part of the operations management (OM) practitioner's "tool kit" (Chase and Prentis, 1987). During the 1960s, the field continued to expand as its dominant focus on relatively narrow optimisation techniques gave way to the importance of viewing the production process as part of an overall system. This broadened perspective was further influenced during the 1970s by the widespread

application of computers to operational problems. From a manufacturing perspective, perhaps the most significant breakthrough was materials requirements planning (MRP) which ties together in a computer program all the parts that go into an end product. The resulting program provides the necessary information for production controllers to plan production schedules and inventory purchases to meet product demands (Forrester, 1971). While this framework does begin to focus on a broader view of organisations than previous theories, it is often criticised for its oversimplified view of reality.

The changing competitive circumstances in an increasingly global business world have continued to require manufacturers to improve both their productivity and product quality. These pressures have led OM specialists to become more involved in the application of advanced technologies, such as Flexible Manufacturing Systems and Computer Integrated Manufacturing, as well as new manufacturing philosophies. Indeed, due to the success of Japanese industry during the 1980s and early 1990s, the management science expanded its focus to include such management practices as just-in-time (JIT) production and total quality management (TQM) systems (Monden, 1983). Yet, as the adoption and implementation of these new technologies and quantitative approaches has shown, the problems confronted by managers and their firms are just as much social and organisational as they are scientific and technological (Kamm, 1987).

Systems theory

As researchers began to realise the interaction between the structural (mechanistic) and human (behavioural) dimensions of organisations and the influence of the external environmental forces, the concept of a business firm as a system began to dominate organisational theory. According to this perspective, an organisation is a system composed of sub-units or sub-systems that continually interact with and are mutually dependent on one another (von Bertralanffy, 1972). Actions that occur within one part of the system not only affect that particular unit (department, section, group, etc.) but can have a "ripple effect" through other organisational sub-systems as well. The implication of Systems theory, therefore, is that things do not simply happen, but rather they evolve from multiple pressures and can entail multiple outcomes.

Within this context, organisations are often referred to as multivariate social or sociotechnical systems, composed of at least four basic components (Nadler and Tushman, 1977, 1980).

1. A Task/Technological Sub-system that consists of the basic or inherent work to be done by the organisation, specific work activities or functions, and the tools or technologies which enable that work to be accomplished.
2. An Administrative/Structural Sub-system (formal organisation), which includes such things as task groupings (units, divisions, departments), work rules, and policies; authority systems (reporting relationships, power bases,

control procedures); the way in which jobs are designed; and the physical work environment (internal).

3. A Sub-system of Individuals, which involves the people who perform the various organisational tasks, and the nature and characteristics of these individuals in terms of their knowledge, skills, attitudes, values, expectations, and perceptions.

4. An Emergent Sub-system (informal organisation), which develops over time as people interact within the formal system and includes such implicit and unwritten arrangements as norms (standards of behaviour), intra-organisational statuses, competition and co-operation between groups, and other "non-programmed" activities and interactions.

These four sub-systems are highly interdependent on each other. A change in administrative policies, for example, will not only affect those policies but can also exert an influence on the task, people performing the task, and the informal system.

Systems theory pertains to dynamic, ongoing activities within an organisation. An important step for understanding organisations is to look at dimensions that describe specific organisation traits.

Daft (1995) argues that organisational dimensions fall into two types: structural and contextual. Structural dimensions provide labels to describe the internal characteristics of an organisation. They create a basis for measuring and comparing organisations. They include formalisation of documentation, specialisation of functions and roles, standardisation of procedures, hierarchy of

authority, complexity, centralisation, professionalisation and personnel ratios.

Contextual dimensions characterise the whole organisation, including its size, technology, environment, goals and strategy, and culture. They describe the organisational setting that influences the structural dimensions. Contextual dimensions can be confusing because they represent both the organisation and the environment as the context within which the structural dimensions occur.

Organisations are also referred to as *open systems*. Conceptually, open and closed systems are compared (Mink *et al*, 1979). Systems that are completely self-contained and do not involve any interaction with their environment are termed *closed systems*. Systems that interact with their environment and are influenced by external forces, by contrast, are defined as open systems. No system, however, is totally open or totally closed (Kast and Rosenzweig, 1972).

Organisations are open systems and are influenced by a multitude of environmental forces or *inputs* such as availability of raw material, changes in technology, competition, changing worker values, governmental policies, and so forth. The organisation transforms these inputs into its goods and services (*outputs*) within the constraints imposed by its environment. In a bank, for example, deposits can be perceived as an input that is transformed (through record keeping and bank policies) into consumer outputs (loans, mortgages, and so forth). This process is influenced by a number of external factors such as changes in the inflation rate, government

policy, and consumer attitudes among other events. Thus, organisations receive inputs from their environment and transform these inputs into usable outputs for their customer or clients within the context of their environment.

There are limits or *boundaries*, however, to the *openness* of organisational systems. These boundaries are based on the input-transformation-output process that links the organisation to other systems; behaviour not linked with these functions lies outside the system. Although the notion of a boundary is somewhat arbitrary and varies from system to system, it is an important concept since open systems are not affected by every external force or change.

As part of the input-transformation-output process, an organisation receives *feedback* or information concerning its performance. The continuous flow of information between a system, its internal components and the external environment forms a *feedback loop* that enables the organisation to adapt to changing environmental conditions. Thus, the capacity to use this information to control the system and make necessary changes is crucial if organisations are to become self-correcting systems.

Another important aspect of systems is that they seek *equilibrium*, a steady state of regularity, consistency, or balance. When something occurs that puts the system out of balance, the system reacts to bring itself back into balance. This does not imply that organisations are, or should be, static and unchanging. Rather, as the feedback process discussed above indicates, organisational systems can use the information provided through their feedback loops to make

certain adjustments to changing conditions (adaptation), and reach and maintain for as long as appropriate a new balance point. This equilibrium point then becomes the steady state until another change indicates the need for further adaptation.

The primary advantage to System theory is that it provides a framework for thinking about organisations in more complex and dynamic terms than earlier management and organisational theories. The application of a Systems perspective is especially useful when assessing the need for major organisational change (Bowditch and Buono, 1994). The theory can guide managers to think about how change in one part of the organisation may affect other aspects of the organisation, and the (potential) effect of the external environment. A potential problem, however, is a tendency to be evaluative in analytic efforts; that is, perceiving a particular behaviour as being "good" or "bad" . Systems analysis is based on the *functionality* of a particular event or behaviour, or the extent to which the event contributes to the maintenance of the system (Leighton, 1978). If a given event occurs that dislocates a particular system or sub-system and leads to difficulties, the event is *dysfunctional* to that system. If an event reinforces the system, it is *functional* to that system. Caution must be exercised, however, when determining functionality. Certain behaviours that may appear to be dysfunctional for task performance (*e.g.*, game playing, socialising) may be quite functional for individuals and the informal system by fulfilling social needs and reinforcing certain norms and interaction patterns.

Contingency theory, or the contingency approach to organisation study, developed in parallel with system theory. Whereas system theory is more concerned with the universal prescription based on the interaction between different systems and/or sub-systems, contingency theory tries to pay heed to predicting efficient form in certain situations of a specific organisation.

Therefore, contingency theory addresses itself to the relational fit between an organisation and its context. There is no universal form of effective business, but the universality exists in the relationship between an organisation and its context to the effect that the more the fit, the better the efficiency across different organisations, industry sectors and cultures.

As the starting point of this dissertation, contingency theory will be discussed in detail in the following section.

2. 3. Contingency Theory: the Starting Point

The central thesis of Contingency theory is that there are no universal principles of management that can be applied uncritically in all situations. Organisation and management approaches must vary from one firm to the next, because it depends on the unique environmental conditions and internal factors which are inherent to each organisation. Contingency theory proposes that the best organisational design is bound up with the situational conditions (Takahashi, 1988). The central concept of contingency theory is congruency between the organisational design and the characteristics of the environment in which a firm operates. Thus, a situational approach to decisions about organisational structure and appropriate managerial behaviours is necessary.

A review of representative works on contingency theory comes next in the search for factors influencing organisational structure.

2. 3. 1. Representative works of contingency theory

Woodward (1958) investigated whether the principles of organisation, as laid down by management theory, correlate with business success. Her research shows that conformity with the "rules" of management does not necessarily result in success nor does non-conformity cause business failure. It shows, instead, that there are differences in organisation structure — for example, the existence or otherwise of line-staff patterns, the number of levels of management, etc. Hence, she concluded that firms using similar technical methods or production systems have a similar organisational structure. Her interpretation is that different technologies impose different kinds of demand on individuals and organisations, and that these demands have to be met through an appropriate form of organisation. Likewise, Woodward found that the size of the corporate centre was a more reliable measure of the "bigness" of a firm than its total personnel. "Bigness" refers to the characteristics of a large firm, including a well-defined and developed management structure, considerable financial resources, etc.

Burns and Stalker (1961) posit two "ideal types" of organisation: the one mechanistic, adapted to relatively stable conditions; the other, organic, adapted to conditions of change.

In mechanistic systems, adapted to relatively stable conditions, the problems and tasks which face the organisation as a whole are, typically, broken down into specialisms. Each individual carries out his or her assigned task as something apart from the overall

purpose of the company. The corporate centre is responsible for seeing that an individual's work is relevant to that of others. The technical methods, duties, and powers attached to each post are precisely defined, and a high value is placed on precision and demarcation. Interaction within the working organisation follows vertical lines — namely, between superiors and subordinates. How a person operates is prescribed by his, or her, functional role and governed by instructions and decisions issued and taken by superiors. This hierarchy of command reflects the assumption that only the person at the top knows all about the firm. Hence, this person is the only one who knows how human resources can properly be deployed. The management system operates as a simple control system with information flowing upwards through a succession of filters, while decisions and instructions flow downwards through a succession of amplifiers.

Burns and Stalker (1961) argue that organic systems adapt to unstable conditions, in which new and unfamiliar problems and requirements continually arise which cannot be broken down and distributed among specialist roles within a hierarchy. Therefore, jobs lose much of their formal definition, as responsibilities and functions have to be constantly re-defined through interaction with others participating in common tasks or in the solution of common problems. Each individual has to do his or her job with a knowledge of the overall purpose and situation of the firm. Interactions run horizontally as much as vertically and communication between people of different rank tends to resemble 'lateral' or horizontal consultation rather than 'vertical' command.

Lawrence and Lorsch (1967) suggest the importance of structural differentiation, such as division of work into organisational systems and the attendant problems for achieving integration of activities. They were among the first to apply contingency theory to organisations in proposing that organisational performance is related to the degree to which (a) organisational divisions are successfully integrated management structures and (b) processes are developed to fit the levels of uncertainty encountered in the environments of organisations.

Hage and Aiken (1967) argue that an organisation's structure can be described by dimensions measuring (a) the pattern of division of labour and (b) the vertical and horizontal distribution of power and influence within the organisation.

Four such dimensions were recognised as adequately representing organisation structure (Pugh *et al*, 1968). These are (1) the degree of formalisation, namely, the extent to which the authority and responsibility of every manager are clearly defined, (2) the degree of standardisation as in formalised job descriptions, performance evaluation system, etc., (3) degree of centralisation, and (4) the interdepartmental distribution of influence.

Regularities have emerged from different studies in the forms of relationships between contextual (situational) variables and characteristics of organisation structure, and also between features of the structure itself.

In addition to this research on the corporate centre, there are two particularly influential arguments relevant to an explanation of variation in organisational structure. The first concerns the influence on structure of a physical organisational attribute: size. The second argument comes from the environment, that is, environmental conditions are posited as critical constraints upon the choice of effective structural form.

Perrow (1967) presented a technology-based perspective on organisations. Technology is meant to be "the actions that an individual performs upon an object or 'raw material' — living beings, human or otherwise, a symbol or an intimate object." Technology is considered the defining characteristic of organisations.

Child (1973a) examined size as a predictor of organisation structure with data from a sample of British business organisations. He found that, while the broad outlines of formal organisation structure are predictable with a high degree of confidence from a knowledge of organisation size, a comparison of size-structure regressions across different industries suggests that other variables must also be taken into account. Child asserts that while size, with technology, location and environmental variables, predicts complexity, the degree of complexity itself has a more direct relationship with formalisation than does size. Size, however, is the main predictor of decentralisation.

Environment conditions have also been singled out as critical constraints upon the choice of effective structural forms (Duncan, 1972; Randall, 1973). The degree of change and the heterogeneity

and range, which characterise environmental activities, are considered to be relevant to an organisation's operations. "Environmental stress", or the degree of threat to organisational decision-makers in the achievement of their goals arising from external conditions, hostility or even indifference, is said to be associated with organisational "slack" (Khandwalla, 1974).

In summary, there are three main emphases within the Contingency school (Fiedler, 1967; Lawrence and Lorsch, 1967; Thompson, 1967; Woodward, 1965).

1. One stream relies heavily on open systems planning (developed from General Systems theory) and stresses that there is no one "best" solution for all organisations, since each firm has to cope with its own unique set of technical, human, and market inputs.

2. A second major emphasis focuses on the formal design of organisations for different technologies and economic environments. Research, for instance, has indicated that in relatively predictable markets with simple, repetitive technologies the more formal, pyramidal organisation structures tend to be effective, while in more uncertain environments with complex technologies, a "flatter" or matrix form of organisation seems to be more effective.

3. The third major component of Contingency theory focuses on leadership style and behaviour. The main conclusion of this stream is that rather than taking one basic approach to

leadership in all situations, leadership style should vary according to such factors as the nature of leader-member relations, the degree of task structure, the power (positional and personal) a leader has, the expertise and willingness of subordinates to assume responsibility, and so forth.

2. 3. 2. Criticisms of contingency theory: sociological explanations

The criticisms of contingency theory lie in its failure to refer to some relevant facets of organisational behaviour. The theory implies a view of organisation which is insufficient from the standpoint of sociological explanation, and this inhibits it from identifying the full extent of opportunities for variety which are likely to exist in organisational design (Child, 1973b).

From the standpoint of sociological explanation, there are three objections to contingency theory. They relate to (1) the political process in organisations, (2) the inadequacy of regarding situational "contingencies" as functional imperatives, and (3) situational imperatives for organisational design.

The first objection to the contingency theory runs as follows. Its approach encourages managers to weigh the implications of the operating situation in which they find themselves against their preferred courses of action. The possibility that managers may have preferences for outcomes other than those indicated by an application of contingency theory leads to the first major objection against the theory. Decision making about organisation is not

simply a matter of accommodating to operational contingencies. It is equally a political process into which other considerations, particularly the expression of power holders' values, also enter (Child, 1973b; 1984).

Much of the social science literature on organisations makes little or no reference at all to political processes, since the social scientist has normally found himself able to research only the consequences of policy which has already been established, especially the extent to which the manifest objectives of the policy have been achieved (Child, 1973b).

Dubin (1962) in his review of available studies of decision making in organisations points out the considerable time which often elapses between the recognition of a problem and the decision regarding its solution. One of the reasons for this time-lag is the operation of the political factor. It would appear typical for an attempt to be made to secure some degree of "legitimation" for the proposal in the eyes of interested parties who have power to obstruct the implementation of any decision which they do not accept. During this process there is an effort to accommodate in the decision the disparate interests held by such individuals or groups. The political process in organisations therefore incorporates an important normative aspect, and it is the means through which the values of various groups impinge to a greater or lesser degree upon organisational decisions (Dubin, 1962).

This process operates in regard to the interface between situational factors and the structure of organisations, because political criteria

are brought to bear upon the way in which contingencies are interpreted (Child, 1973b). To refer to an empirical example, Norman (1971) finds in thirteen case studies of new product development in Swedish firms that the existing values and power structure in a firm played a critical role in predicting reaction to new ideas and information emanating from the environment.

The second objection to the contingency theory argues as follows. A recognition of the part played by the political system in organisations also draws attention to the inadequacy of regarding situational "contingencies" as functional imperatives for organisational design (Child, 1973b). The implication that the relationships between situational variables and organisational variables are "mechanistic" is open to qualification for two reasons. First, some variation appears to be possible in the design of organisation for a unit operating within a given situation, without apparently incurring serious consequences for its level of economic performance. Second, the type of situation in which a unit is operating may itself be open to some degree of deliberate manipulation and selection on the part of organisational decision makers, and therefore it does not necessarily represent a fixed point of reference for them.

Several studies (Rice, 1958; Trist *et al*, 1963; Miller and Rice, 1967) have recorded experiments which appear to demonstrate that, while the choice of organisation at operating levels is limited by technology, the limits do nevertheless allow room for a number of alternatives. In some of the experiments, substantial changes were made in the structure of working groups and in their degree of

autonomy within the overall technological rationale of the production processes. In most cases these changes had favourable results, both in terms of social criteria such as job satisfaction.

The third objection runs as follows. The foregoing line of argument does not deny that the relationships between situational and organisational variables reported in comparative studies may reflect pressures to establish organisational arrangements which cope with prevailing circumstances. It may, however, qualify the conclusion that these findings imply the presence of situational imperatives for organisational design. Extremely little is known about the nature of cause and effect in this whole area (Child, 1973b). However, a cause-effect relationship is quite likely in the case of the association between "bureaucratic" features and large size (Parkinson, 1958; 1980).

Parkinson (1958; 1980) attributed to dysfunctional uses of bureaucracy the rise of the proportion of indirect to direct employees within industry. Departments grow because managers prefer to multiply subordinates, not rivals. In turn, more subordinates make more work for each other. This empire building is more easily achieved in areas away from direct production, since in production a growth in numbers would often be constrained by technology and by established controls on work load, stock levels, and manning. Drake and Mitchell (1977) maintain that power dimensions are important for understanding people's behaviours in the decision process.

Child (1973c; 1984) argues that a political approach advanced by Parkinson (1958; 1980) would in a sense act as a counterbalance to

an exclusive reliance on contingency explanations. His view is that it should lead us to a study of the decisions which are in practice taken on the permissible sizes of divisions and departments within organisations. For Child (1973c), Parkinson (1958; 1980) made a serious point in drawing attention to such decision making as the essence of his Law.

What may well be happening in practice is that, as an organisation grows larger, it begins to employ "professional" managers who take some interest in the available management wisdom. This tends to recommend the establishment of routine system, clear job definitions, the use of delegation, and other bureaucratic features as a basis for orderly and effective operations. Hence as organisations grow larger, such precepts are increasingly applied (Child, 1973b).

The contingency approach not only specifies that organisation should be designed to suit situational circumstances, but it also implies that such circumstances may be taken as given. This latter presumption is not wholly acceptable for two reasons. First, Child (1973b) holds that if there are limits within which an organisation's size, technology, and mode of adjustment to the environment should fail if the organisation is to obtain a high level of economic performance, then these limits do not as yet seem capable of precise definition. The second reason is that the directorates of organisations do in practice over a period of time modify the circumstances in which their organisation is operating, and equally that they sometimes refuse to make such changes even when these become possible. The manipulation of situational variables in the

policy prescription. This is important if policy prescription is to be a main point of our research.

Sociological explanations such as social constructions and dysfunctional uses of bureaucracy contrast with the contingency approach in that (1) they are more appropriate to conduct *ex-post* analysis and provide descriptions of organisation on the basis of theoretical speculation, and (2) these analysis and descriptions are mainly aimed at an academic audience for their discussions.

Easiness of drawing testable statements from contingency theory

Contingency theory offers an appropriate framework for empirical investigation because of its consistency with a number of analytical paradigms. Predictive utility further enhances its appropriateness, and is essential to our research framework, in which an independent variable — information flow — is tested to predict a dependent variable — the centre's size. Thus, predictive utility makes contingency theory a better choice than other competing approaches.

Appropriateness for empirical investigations

Contingency theory was developed through empirical research. Consequently it is an appropriate framework for empirical investigation into organisations (Kagono *et al*, 1985). It is consistent with a number of analytical paradigms such as the information

processing model, and can incorporate many different empirical findings.

Predictive utility

Contingency theory seeks more than one type of clustering among variables. Different relationships are expected in different contexts and configurations. However, it goes somewhat further in searching not just for richly described types but for ones with *predictive utility* (Miller, 1981). They represent statistically significant clustering among variables such that, given a partial description of an organisation (or scenario), it becomes possible to identify its category and thereby to accurately predict many of its other features.

Two arguments against the feasibility of predictive utility may be adduced:

(1) An infinite number of adaptive patterns are possible when many variables are used. That is, there will be too many types, all or most of them being relatively rare.

(2) Inclusion of the time dimension and of strategy-making variables will be particularly troublesome in that they add complexity to the findings. Long time periods may allow intricate and therefore unique scenarios to develop.

Concerning the first argument, Miller (1981) alleges (1) natural selection, (2) adaptive structural functionalism and (3) holistic interdependence among internal factors in defence of contingency

theory[1]. He argues that, due to these factors, the effective and applicable patterns which are important for practising managers are actually limited in their number.

Concerning the second argument, it may be contended that (1) strategy-making is closely tied to structure and environment and (2) adaptive scenarios take place over time and seem to follow common progressions[2]. Thus, in the long run, effective organisational patterns will converge on a limited number rather than diverge.

Applicability for practising managers

As one of the major purposes of this research is to provide practising managers with practical and comprehensive suggestions, the adoption of the contingency approach is justified, since it will help to shed light on such emerging management questions as lean production management and lean management.

[1] Each type of firm has integrally related features: the nature of the technology influences spans of control, the number of levels in the hierarchy, the critical functional area, etc. (*e.g.*., Burns and Stalker, 1961; Woodward, 1965; Filley and House, 1969; Perrow, 1970; Mintzberg, 1979). In other words, adaptive patterns do not only have their variety limited by external constraints through selection and adaptive structural functionalism, they also must have an internally consistent set of attributes.

[2] Filley and House (1969) as well as Chandler (1962) have described several stages of development which firms pass through in a fixed sequence, regardless of their industry sectors. The sequence leads from a simple, one-man firm, to a functionally organised enterprise, to a divisionalised corporation. Each stage has its own complex set of structural parameters which change with size and age in a certain sequence. Penrose's (1980) study also points to the structured patterns which one finds in corporate history.

Practical use for managers

As Lupton (1971) points out, this approach encourages managers to search for an organisational design to suit their particular operational requirements instead of relying upon a universal precept:

> It is of great practical significance whether one kind of managerial style or procedure for arriving at decisions or one kind of organisational structure is suitable for all organisations, or whether the managers in each organisation have to find the expedient that will best meet the particular circumstances of size, technology, product, competitive situation and so on. In practice managers do, indeed must, attempt to define the particular circumstances of the unit they manage, and to devise ways of dealing with these circumstances. (Lupton, 1971:125).

Comprehensiveness

The contingency approach offers a comprehensive framework which can account for interdependent relationships among many organisational phenomena, including environmental, organisational and strategic variables (Pennings, 1992). It seeks to look simultaneously at a large number of variables that collectively define a meaningful and coherent slice of organisational reality (Miller, 1981).

Kagono *et al* (1985) believe that a business organisation is a unified whole, whose components, namely, objectives, strategy, technology, organisational structure and process, as well as the personal predisposition of its members are interrelated and interdependent. Therefore, if the organisation is to cope effectively with its

environment, it must develop an integral configuration among its components. Kagono *et al* (1985) contend that an understanding of the interrelationships among the organisational components as well as between the organisation and its environment is important.

2. 4. Information-processing Need As a Contingent Factor Influencing the Size of the Corporate Centre

The central concept of contingency theory is the congruency between the organisation design and the characteristics of the environment in which a firm operates. While intuitively appealing, this concept is elusive and undefined (Hrebiniak, 1981). It is pointed out that congruency could refer to a broad *gestalt* — a particular configuration of organisation and environment that is whole and complete as a picture. If so, no causality is indicated, since both environment and organisation are needed to complete the picture (Hrebiniak, 1981; Miller, 1981).

2. 4. 1. Uncertainty, equivocality, and turbulence

In order to explicate the concept of congruency between organisation design and environment, and to integrate the diverse organisation design/structure literature, concepts of uncertainty (Galbraith, 1974; Tushman, 1978), equivocality (Daft and Lengel, 1986) and turbulence (Dess and Beard, 1984; Haleblian and Finkelstein, 1993) have been introduced.

Tushman (1978) views organisations as information processing systems facing uncertainty. Uncertainty is defined as the difference between information possessed and information required to complete a task. The basic notion developed by Tushman is that sub-units — sets of groups or departments — face different amounts of work-related uncertainty and that, to be successful, they must match information processing capacity to information processing needs. Since different structures have different information processing capabilities, sub-units can deal with work-related uncertainty through appropriate structural arrangements. Thus, the essence of organisational design is that, to deal most effectively with information processing requirements, a particular set of organisational arrangements must be chosen from a feasible set of structural alternatives (Tushman, 1978).

Daft and Lengel (1986) hold that, in addition to uncertainty, equivocality (defined as ambiguity due to the existence of multiple and conflicting interpretations of an organisation situation) influences organisational design. Their view agrees with Tushman's (1978) in that organisational structure determines both the amount (quantity) and the richness (quality) of information provided to managers.

Equivocality leads to the exchange of existing views among managers to define problems and resolve conflicts through the enactment of a shared interpretation that can direct future activities, whereas uncertainty leads to the acquisition of objective information about the world to answer specific questions (Daft and Lengel, 1986: 557).

In relation to uncertainty, structural design can facilitate the amount of information needed for co-ordination and control of the organisation. As to reducing equivocality, structural mechanisms have to facilitate the processing of "rich" information, that is, the "quality" information which helps to change existing views among managers within a time interval (Daft and Lengel, 1986).

Environments vary in their degree of turbulence or stability (Dess and Beard, 1984). Turbulence refers to volatility or unpredictable discontinuity in an environment (Aldrich, 1979; Dess and Beard, 1984; Keats and Hitt, 1988). Problems in a turbulent environment require a great quantity of information processing (Daft and Parks, 1988).

All these authors consider information processing in organisations as essential to counter uncertainty, equivocality or turbulence. They consider that information-processing needs are handled by organisational design[3]. Thus, these authors contend that information-processing is an essential factor in the design of "effective" organisation to cope with environment.

[3]Their view is much in line with Weick's (1979) idea about designing the organisation to reduce uncertainty.

2. 4. 2. The size of the corporate centre and information-processing capabilities

The corporate centre is considered to be the information-processing centre of an organisation in its relationship with its environment (Thompson, 1967). Team size helps to determine the corporate centre's information-processing capabilities. Therefore, "largeness" provides increased capabilities and viewpoints, which can be critical in turbulent environments (Haleblian and Finkelstein, 1993). In fact, Hambrick and D'Aveni (1992) found that firms nearing bankruptcy tended to have smaller corporate centres than survivors[4].

Large groups can enhance problem-solving capabilities resulting from information-processing by increasing the number of (1) items of information that can be absorbed, (2) critical judgements available to correct errors in inference and analysis, (3) potential solution strategies, and (4) the range of perspectives brought to bear on a problem (Harrison, 1975; Shaw, 1981).

In the light of this relationship between the size of the corporate centre and its information-processing capabilities, it may be contended that the firm's environmental characteristics, through the information-processing needs arising from them, influence the size of the corporate centre.

[4]Scholars have argued that large groups are superior to small ones because large groups have more capabilities and resources with which to solve group tasks (Hill, 1982; Jackson, 1992).

Due to the difficulty of directly measuring information-processing phenomena[5] between sub-units of an organisation, a different approach to operationalising the information-processing perspective is needed. Galbraith (1973) contends that information-processing capabilities of an organisation are influenced by the design features including rules and programmes, hierarchical referral, goal setting, vertical information systems and lateral relations. He also argues that, when uncertainty (*i.e.*, information gap between the information required and the possessed) increases, exceptions must be referred up the hierarchical structure for decision-making, and, therefore, information capabilities will be enhanced by vertical information flow between the corporate centre and lower management. However, when uncertainty and information-processing needs are large, there must be lateral (*i.e.*, horizontal) relations in addition to the vertical information flow, in order to share the information-processing capabilities which cannot be fully loaded in the centre.

Based on the above argument by Galbraith (1973) and also on account of difficulties to measure information flow directly, the present study uses information-processing as an intervening concept to aid in positing relationships between the size of the corporate centre and planning and control influences (vertical

[5]A number of empirical studies have used some form of information-processing approach (Burns and Stalker, 1961; Lawrence and Lorsch, 1967; Duncan, 1973; Van de Ven, Delbecq, and Koenig, 1976; Galbraith, 1977; Tushman, 1978b). The more micro-level studies of organisations, where the units of analysis are either individuals or small groups, have managed to measure directly such aspects of information processing as the frequency of oral communications between work groups (Tushman, 1978b), the extent to which policies and procedures, work plans, personal contact, and meetings are used to co-ordinate members of work teams (Van de Ven, Delbecq, and Koenig, 1976), and the structure of groups during decision-making (Duncan, 1973).

information flow, to be dealt with in Chapter 3) and linkages (horizontal information flow, to be dealt with in Chapter 4).

The "functionalist" interpretation of information-processing does not exclude other approaches like that of communications process which influences the organisation structure and, therefore, indirectly the size of the corporate centre. Masuda (1981) believes that informatics (or Information Technology) will change organisation structures from chain-of-command pyramids to matrices, and that hierarchies will be flatter, as the technostructure of experts becomes a larger part of the total workforce[6]. Daft (1995) predicts that the impact of Information Technology on the structure of organisations can be: (1) flatter organisation structure, (2) greater centralisation or decentralisation, depending on manager choices, (3) improved co-ordination, (4) fewer narrow tasks and more intellectual engagements and challenging work, and (5) larger professional staff ratio. Carney (1986) discusses the emerging paradigm for the understanding of organisational communications exemplified by the "soft" skills of personnel management and human resource development in Japanese firms. As noted by Pascale and Athos (1981), these skills are noticeable in the following areas:

- care taken to choose and develop the type of employee desired;

[6] It is likely that informatics is not affecting organisation structures too much. PC applications like Lotus Notes link people together maintaining chain-of-command pyramids.

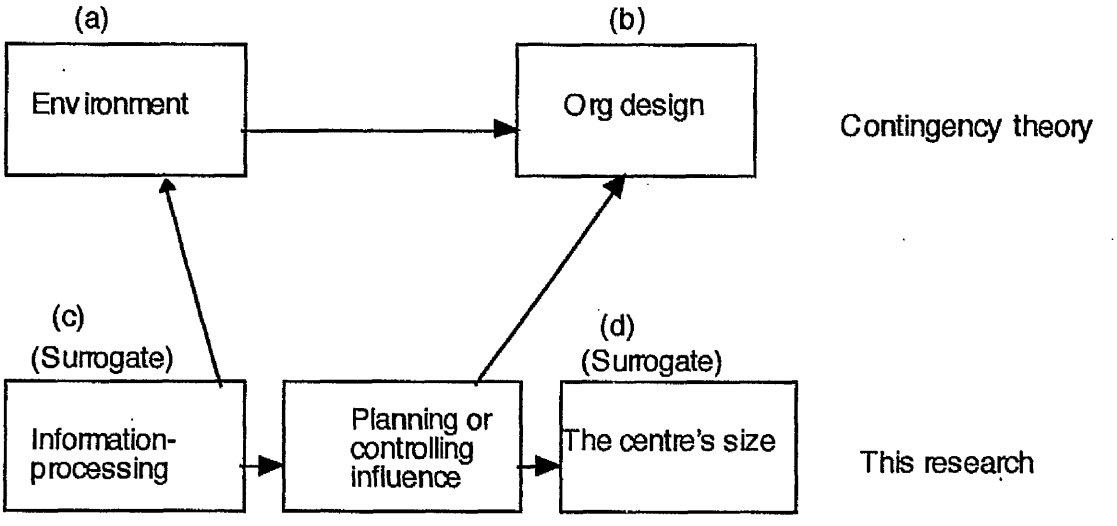
- developing skill specialities in key staff so as to make the organisation outstanding in its field;
- developing an appropriate top management style and an organisational culture to go with it;
- having a transcendent goal and philosophy to give a larger meaning to working for the organisation.

The discussions on organisation theory from a sociological standpoint will be further elaborated upon in Chapters 3 and 4.

2. 4. 3. Information-processing and contingency theory

This research is based on the contingency theory's argument that there is a congruency between organisation design and the characteristics of environment. Therefore it uses the following framework to explain information-processing and its influence on the size of the corporate centre. (See Figure 2. 2.)

Figure 2. 2.: Framework of this research



* (c) and (d) are surrogates of (a) and (b)

** (a) and (c) influence (b) and (d).

The figure shows that the size of the corporate centre is contingent on the planning and control influences (See Chapters 3 and 4), which are, in their turn, contingent on information-processing.

2. 4. 4. Definition of the terminology

As a cornerstone of this research, information-related terms ought to be defined.

- *Information* means input or output of strategic decision-making.
- *Information flow* (vertical or horizontal) relates to the way information passes through different organisational units.

- *Information-processing* means a process which adds value by means of storing, analysing, transforming and creating information.
- *Information-processing capability* is concerned with the effectiveness and efficiency in the information-processing and is a combined effect of information structure — organisation structure and dynamics as well as planning and control intensity — and information resources.

2. 5. Summary

In conjunction with Chapters 3 and 4, this chapter forms part of the literature review.

Organisation theories including administrative, scientific management, structuralist, neo-classical, human relations, behavioural, management science, systems, and contingency theories were reviewed. Contingency theory is adopted as a starting point, since it makes it easy to draw testable statements which are amenable to empirical studies and its results are applicable for corporate management. Factors influencing organisational structure, including the size of the corporate centre, were examined. Information-processing was found to be a factor influencing the size of the corporate centre.

The next chapter discusses the functions performed by the corporate centre and how they relate to the vertical information flow.

Thereafter, the corporate centre and the horizontal information flow are discussed in Chapter 4.

information flow, and, therefore, influence the size of the corporate centre.

Section 3. 4 compares the alternative explanation of the centre's size based on sociological elements with the argument of this research based on information-processing capabilities. It is concluded that information-processing needs and capability are the main determinants of corporate centre size, although due recognition is made, in many situations, to the explanatory power of sociological elements.

Section 3. 5 examines the works of those authors who have analysed different types of corporate centre. These authors consider different dimensions to influence the type and size of corporate centre, while planning and control influences are found to be closely related to vertical information flow.

Section 3. 6. summarises the discussions in the chapter.

3. 2. The Centre's Functions and Vertical Information Flow

This section discusses the functions performed by the corporate centre and how they relate to the vertical information flow. It first addresses the emergence of the corporate centre as the cardinal point of corporate organisation and, thereafter, the functions it performs, namely, planning, allocating resources, controlling and auditing performance, and providing central services. The discharge of these

functions gives rise to vertical information flow and information-processing needs.

The literature on the "nature" of the corporate centre, namely, how the corporate centre has been formed, what functions it discharges in corporate management, what value added it creates, etc., is sparse. However, what emerges from the literature is that there are reasons for the existence of a corporate centre that takes on the role of intermediary between the business unit and the financial markets. Our review is centred on the works of Chandler, Williamson — two representative authors on the subject.

Chandler (1962) studied how four major US firms (Du Pont, General Motors, Standard Oil of New Jersey and Sears, Roebuck) changed from a functional structure to a divisional structure. These were the first firms to devise this "decentralised" form. Du Pont and General Motors began to fashion their new structure shortly after World War I. Standard Oil of New Jersey started its reorganisation in 1925, and Sears, Roebuck in 1929. There were some firms that initiated comparable changes between 1925 and 1932, but these administrative reorganisations proved to be less creative innovations than those of the afore-mentioned four major firms. Therefore du Pont, General Motors, and Standard Oil of New Jersey were selected for study. Sears was also chosen because its activities were complex and because information about the firm was more readily available.

All four of these firms first adopted a "functionally departmentalised, centralised structure". The centre's role in a functionally organised firm is to co-ordinate and integrate the output of the several functional departments to changing market demands, to provide central services, and to allocate the future use, as well as to appraise the present performance, of the resources of the enterprise. Chandler (1962: 293) states:

> The executives at all four companies came to realise...that systematic policy formulation and allocation of resources called for carefully defined budgeting and capital appropriation procedures. This planning also required information on future financial and general economic conditions as well as on anticipated market demand.

Chandler argues that, when the administrative load on the senior executive officers increased to such an extent that they were unable to handle their entrepreneurial responsibilities efficiently, the innovators built the divisional structure with (a) a corporate centre whose executives would concentrate on entrepreneurial activities and (b) autonomous, fairly self-contained operating divisions whose managers would handle operational activity. Thus, the corporate centre focused more on planning and strategy. Budgeting and capital approval processes were also strengthened to permit central control. The centre reduced its involvement in co-ordination, limiting its role to forming links between divisions and leaving the functional co-ordination to the general managers of divisions.

The experience of all four firms clearly shows how concentration on operational activities interfered with, and inhibited, long-term planning, including the designing of a new structure to meet the administrative needs of a new strategy. Only when the executives withdrew from day-to-day tasks did they produce useful organisational plans or proposals. The executives in the corporate centre, freed from all but entrepreneurial responsibilities, could fully devote themselves to planning and appraisal (Chandler, 1962).

In short, decentralising enabled the centre focus attention on adding value to the divisions through activities relating to planning and the allocation of resources, control and audit of performance, and by providing some central services. In the functional structure, the centre had carried out these activities, but had become overburdened with co-ordination and operating issues.

Chandler thus explained why the divisional structure has been more successful than the functional structure in companies with diverse businesses. What he did not explain is whether the centre of a divisionalised company is more effective in allocating resources and exercising control than are the financial markets.

Williamson (1975, 1981, 1991) filled this explanation gap. He supports Chandler's view that the divisional structure could be more effective than the functional structure, but he also considers why businesses within a large diversified firm perform better than they would as separate firms, each responding to the pressures of the outside

financial markets. Williamson (1975, 1981, 1991) calls his way of focusing on the study of organisations the "transaction cost" approach, which claims that the economising of transaction cost is central to the study of organisation.

Williamson (1975) argues that under the divisional structure, because of efficient and effective control by the corporate centre, control and internal efficiency are both enhanced within a large diversified firm, as compared with the case in which divisions are separate firms. He likens this control to the capital market control of management, calling the divisional structure a miniature capital market.

Williamson (1975) holds that the corporate centre is more efficient than the capital market for three reasons. First, it is an internal rather than external control mechanism with authority, expertise and low-cost access to the requisite data, which permits the corporate centre to make detailed evaluation of the performance of each of its operating parts. Second, the corporate centre can undertake fine-tuning as well as discreet adjustments. Taken together, these two factors permit the corporate centre to intervene early in a selective, preventive way. Finally, the costs of intervention by the corporate centre are relatively low.

Chandler and Williamson argue that the corporate centre of divisional structure can be more effective than either a functional structure or the capital markets in managing the diversified portfolio of businesses. The centre's functions as intermediary between the businesses and

the financial market are found by Chandler to be planning and allocating resources, controlling and auditing performance, and providing some central services[1].

These basic functions mentioned by Chandler (1962) relate to the vertical co-ordination described by Hungenberg (1993), who asserts that the centre's intervention in decision-making processes at the business unit level will define the intensity of this vertical co-ordination and thus its information flow. Different types of corporate centres in terms of their strategic focus will then have different staff size to carry out the necessary information-processing.

In summary, in the discharge of the centre's functions outlined above, *i.e.*, planning and allocating resources, controlling and auditing performance, and provision of centre services, a need for information-processing for vertical co-ordination arise. This need varies as the corporate centre varies its strategic focus.

[1]The functions of the corporate centre have also been separately studied by other authors. Steiner (1968), Child (1972), Vancil and Lorange (1975), Hofer and Schendel (1978), Christensen *et al* (1978), Bower and Doz, (1979), Andrews, (1980), Andrews (1983), Burgelman (1983), Hambrick and Mason (1984), Galbraith and Kazanjian (1986), Ansoff (1987), Hamel and Prahalad (1989), Chakravarthy and Lorange (1989), Hax and Majluf (1991), and Daniel (1992) are some of them.

3. 3. The Size of the Corporate Centre as a Function of Vertical Information Flow

Before addressing the size of the corporate centre and the vertical information flow, this section examines how strategic management style influences information flow.

Based on the results of a cross-section interview survey, Goold and Campbell (1987) define two dimensions of the corporate centre's influence on lower management, namely, planning influence and control influence, which are two of the three functions described in the preceding section.

As a background to these two dimensions of influence, Goold and Campbell point out that there are basic conflicts or tensions among different layers of management, *i.e.*, between the profit centre, the business unit, the division, the group and the corporate headquarters or centre.

The five fundamental tensions encountered by Goold and Campbell (1987: 164) are:

- clear responsibilities versus multiple perspectives
- detailed planning versus entrepreneurial decisions
- strong leadership versus business autonomy
- long-term strategic versus short-term financial objectives

- tight control versus the flexible pursuit of long-term objectives.

In order to see how the centre copes with these tensions, Goold and Campbell focus on the way the centre influences managers lower down thereby affecting the decisions they take. Therefore, there is a continuous vertical information flow between the centre and the lower management. Two dimensions of the centre's influence which they identify are planning influence and control influence.

Planning influence concerns the centre's efforts to shape strategies as they emerge and before decisions are taken. Goold and Campbell (1987: 36-40) cite seven elements which the corporate centre uses to influence lower management. These are: *organisation structure, review of plans, strategic themes, broad strategic thrusts, specific suggestions, management of linkages between businesses* and *allocation of resources.* These elements are discussed below.

Organisation structure: the way the organisation is structured will affect the degree of planning influence. If a manager has full responsibility for a business unit, without overlaps or functional links with other units, he will feel less pressure to seek top-down advice and guidance. If, on the other hand, there are extensive overlaps and dual responsibilities, the unit manager will feel more external influences on his planning decisions.

Review of plans: business units review their plans with the centre. In some firms this review is carried out only on the annual budget. In others, the centre reviews strategic plans as well as budgets. These formal reviews provide an opportunity for the centre to guide the managers in the unit. Alongside these formal reviews there is continual informal contact between managers at the centre and in the business units. These informal reviews are an important part of the influence process.

Strategic themes: in some firms, the corporate centre has a view of what are the 'distinctive competences' of the firm as a whole. Even though such themes are often stated in the broadest of terms, and allow business units latitude to interpret them in their own way, they can have an important top-down impact on the choice of strategy.

Broad strategic thrusts: a related, but separate, type of influence stems from the specification by the corporate centre of broad objectives or thrusts for particular business units. Such a specification may include broad product range goals, market development objectives and competitive position. It provides a framework for strategic thinking.

Specific suggestions: the corporate centre may influence plans by making specific suggestions. The degree to which central managers refrain from intervening with specific suggestions reflects their commitment to decentralisation. Suggestions may arise from formal or informal budget or plan discussions. Suggestions form part of the top-down influence process.

Management of linkages between businesses: central influence in the form of broad thrusts or specific suggestions is exercised where linkages between businesses or divisions need to be managed. Linkages relate to the co-ordination of functional strategies, cross-supply and transfer pricing between units in a vertically integrated chain, sharing or transfer of expertise, and exploitation of a shared resource. Linkages lead to opportunities for the corporate centre's intervention. The degree of influence which the centre exerts is a function of how active central managers want to be in resolving the linkage issues.

Allocation of resources: the most powerful way in which the corporate centre can influence strategy is through the allocation of resources. By supporting one investment project rather than another, the centre can affect the whole composition and performance of the businesses that make up the firm.

Control influence concerns the way in which the corporate centre reacts to results achieved. Whereas planning influence is about the 'inputs' to decisions, control influence is about the results of decisions, *e.g.*, the 'outputs' such as profit or market share. Control influence arises from the targets that the centre agrees with its business units, the way the centre reacts to poor performance, and the frequency with which the centre monitors results. Therefore the vertical information flow derived from control influence is on a discrete basis. The budget process, the capital appropriation system, and the

strategic planning system provide the formal framework for control, which is essentially a linked process of *agreeing upon objectives, monitoring results* and *applying pressure and incentives* (Goold and Campbell, 1987: 40-41).

Agreeing upon objectives: the setting of objectives is the first step of the control process. The type of control influence adopted by the corporate centre varies according to the precision and detail of targets, the balance between objective and subjective measures, the time frame for achievement, the influence of the centre in proposing and agreeing upon objectives, the degree of 'stretch' built into objectives, and the emphasis on financial versus non-financial targets.

Monitoring results: the way in which the corporate centre seeks out performance information, the type of information it requests, and such arrangements as the frequency and duration of discussions it has with managers about the results are part of the control process.

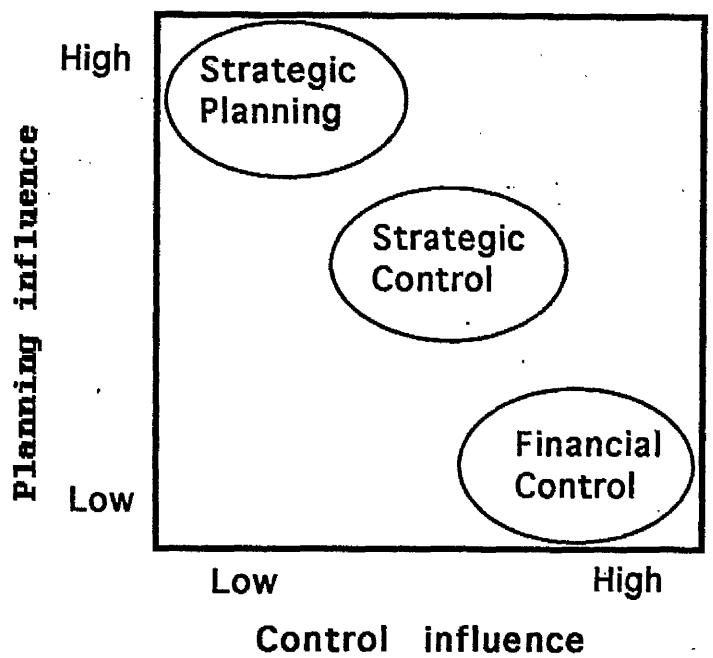
Pressure and incentives: bonuses or careers linked to performance targets enhance the pressure of the control process. The reaction of the corporate centre to poor performers is an important influence both on the sorts of strategies that business managers are likely to propose and on the actions they take during the year.

In summary, the centre's planning influence is affected by the organisation structure, the review processes, the type of guidance from the centre, the way overlaps are managed and the way scarce resources

are allocated. Control influence relates to the way in which the centre reacts to results achieved. Using these two dimensions of planning influence and control influence, Goold and Campbell (1987) identify different management approaches which they call 'strategic management styles.' (See Figure 3.1)

Based on their research in sixteen British companies Goold and Campbell (1987) conclude that *strategic planning*, *strategic control* and *financial control* are the most common styles in the UK. They are explained below.

Figure 3. 1.: Strategic management styles



Source: Adapted from Goold and Campbell (1987: 36)

Strategic planning: the centre works with the business unit managers to develop strategy. It establishes extensive planning processes, makes contributions of substance to strategic thinking, and may have a corporate strategy or mission guiding and co-ordinating developments across the business units. Less attention is devoted to the control process. Performance targets are set in broader, more strategic terms. Annual financial targets are seen as being less important than the longer term strategic objectives.

Strategic control: the centre prefers to leave the initiative in the development of plans to business unit managers. The centre does review and criticise the plans, but uses reviews as a check on the quality of thinking of business unit managers, rather than as an opportunity to give direction. The control process is an important influence mechanism for the centre. Targets are set for strategic objectives such as market share, as well as for financial performance, and managers are expected to meet the targets. On the other hand, budget can only be missed when important strategic objectives are at stake. Strategic control companies combine moderate planning influence with tight strategic controls.

Financial control: the centre's influence is exercised mainly through the budget process. Corporate management's role in developing strategies is limited, and long-term plans are not formally reviewed by the centre. Instead, the centre focuses on a close review of the annual budget. Profit targets are set when the budget is approved, and careers are at

stake if budgets are missed. Financial control companies combine a low level of planning influence with tight financial controls.

Young (1993) found that the size of the corporate centre is associated with strategic management style, therefore, with the extent to which planning and control influences are exercised by the corporate centre. *Financial control* firms tended to have a smaller corporate centre with fewer functions; and *strategic planning* firms had a larger corporate centre with more functions. Compared to the functions and staff of the corporate centre in *strategic control* firms, *financial control* firms had about four fewer functions, and about half the staff, whilst *strategic planning* firms had approximately three more functions, and about three times the staff (Young, 1993: 22).

Hungenberg (1993) posits an alternative explanation to Goold and Campbell's (1987), contending that the corporate centre may adopt one of the three following management styles with different intensity of co-ordination (vertical and horizontal): *operational holding*, *management holding*, and *financial holding*.

An *operational holding* centre is effective if intensive vertical and horizontal co-ordination can add substantially to business values. If so, the corporate centre is intensively engaged in decision-making processes at the business level, for instance, by determining detailed goals for costs, production targets or sales volumes. Additionally, cross-business co-ordination and synergy exploitation are main tasks of the centre. The corporate centre controls strategic management and,

to a large extent, also the operational management of business units. *Operational holdings* can be effective in industries like chemicals, computers, or telecommunications because of existing synergies and the possible similarities of the business systems of various business units.

The *financial holding* centre can be effective if the potential for value enhancement through the horizontal and vertical co-ordination of businesses is small. This description frequently applies to diversified companies, which control heterogeneous business units. A *financial holding* centre leaves operational management entirely to the business units. Furthermore, the centre is involved in the strategic management of businesses only indirectly, by determining financial goals, *e.g.*, profits, cash flow, and staffing top management positions.

A *management holding* centre ranges between the two extremes of *operational* and *financial holding* in terms of the intensity of co-ordination. A *management holding* centre does not interfere with the operational management of business units, but still controls strategic management tasks, thereby involving the business units' managements to some extent. A *management holding* centre can be appropriate in industries like electronics, automotive, or manufacturing, where business units require similar managerial skills, and advantages of shared business systems can be exploited.

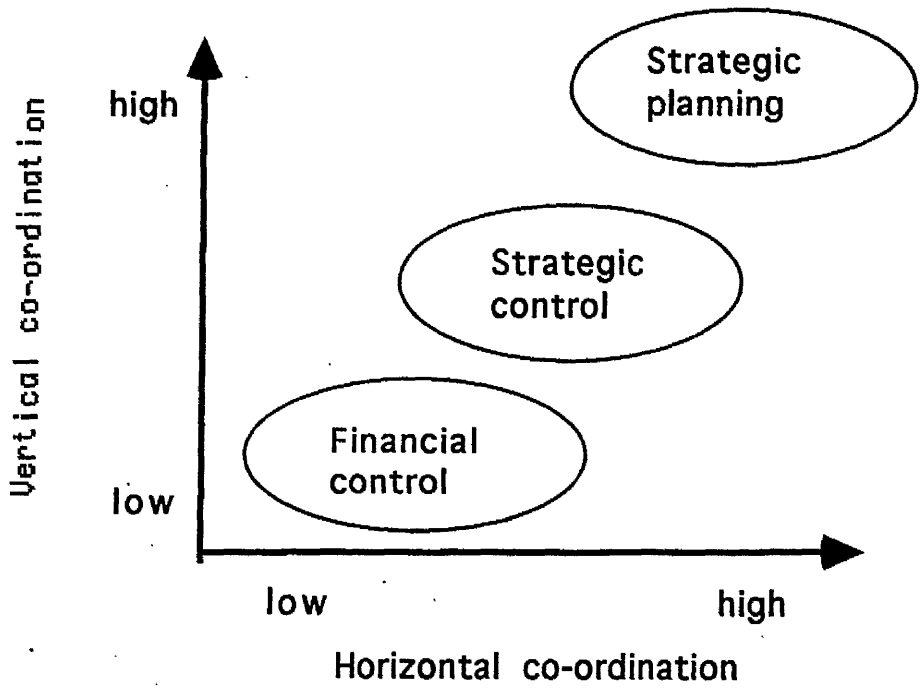
Hungenberg (1993) contends that (a) the intensity of the corporate centre's intervention in decision-making processes at business unit

level (vertical co-ordination) and (b) the extent of cross-business co-ordination (horizontal co-ordination) depend on the role the corporate centre chooses to fulfil. However, the effectiveness of the role played by the corporate centre should also relate to the nature of the firm's business.

The characteristics of the corporate centre in operational, management and financial holdings correspond to Goold and Campbell's three strategic management styles of strategic planning, financial control, and strategic control types, respectively.

Based on the above contentions of Goold and Campbell, and Hungenberg, the relationships between vertical and horizontal co-ordinations and strategic management styles may be set out as in Fig. 3. 2.

Figure 3. 2.: Relationships between strategic management styles and co-ordinations



Source: Adapted from Hungenberg (1993: 69) and Goold and Campbell (1987: 36)

It is evident from Figure 3. 2. that different strategic management styles adopted by the corporate centre lead to different intensities in the vertical and horizontal co-ordination. This difference in its turn determines their respective information-processing needs in either vertical or horizontal directions, and consequently the necessary size of staff to meet these needs.

3. 4. Sociological Explanations of the Size of the Corporate Centre Discussed in Chapter 2

Subsection 2. 3. 2 presented plausible sociological effects on the organisational size, in particular, overstaffing. This thesis, however, is based on the premise that the size of the corporate centre must be mainly associated with its information-processing needs and capabilities.

The following comparison between the sociological approach and information-processing approach points out that information-processing needs and capabilities may be more plausible determinants of the size of the corporate centre than sociological considerations. The two approaches will be further discussed in Section 8. 3. 4 on the basis of the results of the research.

The alternative explanation based on sociological elements argues that: (1) even within the limitations of functional imperatives, there is room for a number of alternative organisational arrangements (Rice, 1958; Trist *et al*, 1963; Miller and Rice, 1967); (2) the organisational arrangements must be accepted by different groups of the organisation (Child, 1984); and (3) the general trend in such organisational arrangements is overstaffing (Parkinson, 1958 and 1980; Child, 1984).

In contrast, this research holds that the centre's size is determined by its information-processing needs and capabilities. If the centre's size

is large, and there appears to be overstaffing, it argues that this is due to the need for larger information-processing capabilities.

The centre's size must not differ too much from other competing peer organisations, because, as Child (1984) points out, there is only marginal scope to maintain a preferred but inefficient form of organisation in a firm operating in competitive markets[2].

If the centre's size is large, then there must be some value-added justifying its largeness. Otherwise, it has the potential for becoming inefficient and the competitiveness of the firm may be lost. Value is added by the largeness of the centre's size, since the larger the size, the larger the information-processing capability.

The information-processing approach relates to the view that organisation consists in information-processing systems coping with the uncertainty (Tushman, 1978) and equivocality (Daft and Lengel, 1986) surrounding the organisation, as discussed in Subsection 2. 4. 1. Information-processing is handled by organisational design (Weick, 1979). The size of the corporate centre is an essential aspect of

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[2] Based on ILO's (International Labour Organisation) data Gordon (1996) argues that, in 1989, the relative size of the US "bureaucratic burden", namely, private non-farm managerial and administrative employees in non-farm employment, had reached more than three times the level in Japan, with US's 13.0 per cent against Japan's 4.2 per cent. Young (1995) contends, on the contrary, that the Japanese firms have corporate centres 5 to 10 times larger than German or UK firms.

Such divergent data may result from the difference in the definition between "bureaucratic burden" and corporate centre. However, it cannot be denied (1) that the size of indirect staff is largely different from one country to another and (2) that the economic cost resulting from such difference is not easily justified by the foregoing sociological elements. Section 8. 3 will further discuss the issue.

organisational design[3]. When the uncertainty grows larger in the environment due to competition, the centre's size will increase to cope with an increase in information-processing needs.

Thus, information-processing needs and capability are the main determinants of corporate centre size in Japanese firms, although due recognition should be made, in many situations, to the explanatory power of sociological elements.

3. 5. Previous Researches on the Factors Explaining the Centre's Size

Authors also relate the size of the corporate centre to other factors such as diversification strategy, its type of adaptation to environment, the degree of divisional autonomy, and modes of directing the organisation. Before concluding this chapter, these factors are reviewed.

Table 3. 1. compares the factors considered to influence the centre's size.

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[3] If the size of the centre is severely affected as a consequence of restructuring and re-engineering, its information-processing capacity seems to be deteriorated in the form of corporate memory. The Economist (1996b) reports that, in Japan, companies have gone to unusual lengths to avoid dismissing middle managers and supervisors, because they put great stress on the importance of "tacit" knowledge — hunches, know-how, ideals and experience. Unpublished research by Monitor, a consultancy, cited by the Economist (1996b) found that nine out of ten firms that had outperformed their industries over a ten-year period had "stable" structures, with no more than one reorganisation and no change in chief executive, which helped them to keep their information-processing capacity intact.

Table 3. 1.: Key Factors influencing the size of the corporate centre

Author(s)	Year	Key factors influencing the size of the corporate centre
Lorsch & Allen	1973	Organisation structure (Conglomerate or vertically integrated)
Bower	1974	Diversification strategy
Miles & Snow	1978	Strategy types
Miles *et al*	1983	Configuration of internal structure and process
Goold & Campbell	1987	Planning & control influences (Discussed in Section 3. 2.)
Cresap	1988	Number of functions (Hands-on or hands-off management)
Hungenberg	1993	Vertical & horizontal co-ordination (Discussed in Section 3. 2.)

Lorsch and Allen (1973) address the issue of the size of the corporate centre along with the functions performed at the centre, and the degree of divisional autonomy. Their study is based on empirical research of six divisional firms. Two firms were vertically integrated. The other four were classified as what Chandler (1962) called conglomerates — a small corporate centre with nearly all functions placed within the division.

Lorsch and Allen (1973) measured the amount of integrating effort spent at the corporate centre on corporate-divisional relations and inter-divisional relations. The lower-performing vertically integrated firm was shown to spend too little effort in integrating the interdependent divisions. On the other hand, three of the four conglomerates had a small corporate centre and performed few divisional functions, whilst the one conglomerate that operated as a vertically integrated firm was the poorest performer. In general, the vertically integrated corporate centres were larger and performed more corporate functions than the conglomerates (See Table 3. 2.).

Table 3. 2.: Basic characteristics of the corporate centre units in six firms

	Conglomerate Firms			Vertically integrated Firms		
	1	2	3	4	5	6
A. Size—Total number of management and professional employees	17	20	25	230	479	250
B. Functions performed in Reference to divisions						
1. Financial-control	Xp	Xp	Xp	Xp	Xo,p	Xo,p
2. Long-range planning	Xp	Xp	Xp	Xp	Xo,p	Xo,p
3. Legal	Xo,p	Xo,p	Xo,p	Xo,p	Xo,p	Xo,p
4. Industrial relations	Xo,p	Xo,p	Xo,p	Xo,p	Xo,p	Xo,p
5. Operations research					Xp	
6. Marketing		Xp	Xp	Xo	Xo	Xo
7. Manufacturing /industrial engineering			Xp	Xp		
8. Planning and scheduling of output					Xo	Xo
9. Purchasing					Xo	Xo
10. Engineering (other than industrial)				Xp		
11. Research and development				Xo,p	Xo	Xo

Source: Lorsch and Allen (1973: 148)

Note: An "X" indicates that certain functions in specified areas are performed by the corporate centre unit for the divisions. A "p" indicates that corporate involvement is of a policy-setting nature (*i.e.*, setting policies, advising, providing basic approach). An "o" indicates an operating responsibility for the corporate centre unit (e.g., actually carrying out some purchasing activities for certain divisions).

Lorsch and Allen's finding (1973) relates the size of the corporate centre to vertical integration. Since more information flows in vertical integration , their argument may be seen as an approach to information flow.

Bower (1974) posits that the size of the corporate centre varies in accordance with diversification strategy. He holds that the corporate centre in firms which are widely diversified in partially-related businesses has a larger number of executives than that of large financially-based collections of separate operating units. The latter have no executives in research and development, marketing, manufacturing, and purchasing and traffic basic functions, yet have a much higher percentage of executives in general management, finance, planning, and public relations.

It may be conjectured that partially-related businesses exchange a larger amount of information than large financially-based collections of separate operating units. Therefore, Bower's argument could relate to the information flow approach mentioned in the preceding section.

Miles and Snow (1978) and Miles *et al* (1983) identify various types of organisations and, with them, corporate centres. They are *defenders*, *prospectors*, *analysers*, and *reactors*. These types result from differences in the strategy and configuration of internal structure and process of the firms. The size of the corporate centre for these types is not explicitly mentioned in Miles and Snow (1978), whereas Miles *et al* (1983) suggest that the prospector has a large corporate centre dominated by marketing and research and development experts.

Defenders are organisations which have narrow product-market domains. The corporate centre in this type of organisation is highly

expert in its organisation's limited area of operation but does not tend to search outside its domain for new opportunities.

Prospectors are organisations which almost continually search for market opportunities, and they regularly experiment with potential responses to emerging environmental trends. The corporate centres of these organisations are the creators of change and uncertainty to which their competitors must respond.

Analysers are organisations which operate in two different types of product-market domain, one relatively stable, the other changing. In its more turbulent areas, the corporate centre watches its competitors closely for new ideas, and then rapidly adopts those which appear to be most promising.

Reactors are organisations in which the corporate centre frequently perceives change and uncertainty occurring in its organisational environment but is unable to respond effectively.

No one type of corporate centre is proposed as superior to others, as several have been employed successfully at the same time by different firms in the same environmental setting. However, each type must conform with an appropriate configuration of internal structure and process.

In the argument of Miles and Snow (1978) and Miles *et al* (1983), prospectors use 'hands-on' management from the centre than other

types of firms. It follows, then, that vertical information flow in prospectors is more intense than in other 'hands-off' organisation styles. Thus, the argument points to the possibility that the difference in the corporate centre's functions and its size might be influenced by vertical information flow.

On the basis of interview and mail survey with 45 leading British firms, Cresap, a management consultancy firm, found (1988) four different types of corporate centre reflecting modes of directing the organisation — *targeting*, *guiding*, *directing*, and *running* corporate centres (See Table 3. 3.).

The fundamental management philosophy of the *targeting* corporate centre is 'hands off', underpinned by a belief that this philosophy has motivational benefits for the operating units. A very clear separation between the role of the corporate centre and the activities of the subsidiaries is emphasised. The corporate centre is viewed as 'an overhead' . The *targeting* corporate centre controls the performance of the firm by setting financial targets and monitoring performance against these targets. The mission and fundamental objectives of the firm are decided at the corporate centre. Strategy formulation is the responsibility of the operating units and is not initiated from the corporate centre. The provision of services and support to the operating units is not seen as a role for the *targeting* corporate centre.

The *guiding* corporate centre espouses a 'hands off' philosophy, but its approach is marked by a greater degree of involvement with the

operating units. So while operating decisions are largely left to the individual business units, which are set financial targets and held accountable for their performance relative to these, the philosophy is supported by a desire to 'help' the operating units, and to foster the sense of belonging to an 'active corporate group'. The *guiding* corporate centre sets out to influence decision making at the operating unit level via the provision of 'advice and co-ordination'. Typically, such a corporate centre develops the overall company strategy but is also involved in a dialogue with the operating units in helping them to develop their individual plans within the context of the overall strategy.

In contrast to *targeting* and *guiding* corporate centres, the *directing* corporate centre takes more of a 'hands on' approach in management philosophy. It not only helps the operating units to develop strategic plans, but also provides directional initiatives from the centre, and gets involved in the implementation of business strategies and the integration of major business decisions. The *directing* corporate centre takes the view that the corporate centre is best placed to undertake certain activities on a centralised basis. Therefore, it not only co-ordinates common activities but, in some cases, may undertake entire functions centrally for the whole organisation. Management training, purchasing, and research and development are typical examples of centralised functions. The provision of services and support to the operating units is an important role of the corporate centre.

The *running* corporate centre is the most involved of the four types of corporate centre. It is very much 'hands on' in orientation. There is

often little effective separation between the corporate centre and the business. The role of the corporate centre is integral to the firm's activities. The centre develops and monitors plans, policies, and guidelines, makes major operating decisions and, to all intents and purposes, runs the firm. The traditional distinction between "line" and staff is often neither clear nor relevant. The provision of services to the operating units is a key function for such a corporate centre.

Table 3. 3.: Four types of the corporate centre

Tasks	TARGETING	GUIDING	DIRECTING	RUNNING
Set fundamental objectives	x	x	x	x
Monitor financial targets	x	x	x	x
Conduct external relation-ships	x	x	x	x
Meet statutory obligations	x	x	x	x
Manage senior executive resources	x	x	x	x
Co-ordinate business plans		x	x	x
Provide services		x	x	x
Integrate business decisions			x	x
Control business decisions				x
Size as a percentage o f total company staff	0.1-0.7%	02-3.4%	1.8-9.1%	3.7-27.5%

Source: Cresap (1988: II-5)

Cresap (1985) contends, on the whole, that the 'hands-on' approach in management philosophies reflected in a greater number of tasks (Table 3.2) leads to a larger size of the corporate centre. As the 'hands-on' approach suggests a higher vertical information flow between the centre and lower management, Cresap's contention thus suggests a relationship between the size of the corporate centre and vertical information flow.

The foregoing discussion suggests that diversification strategy, organisation adaptation, the degree of divisional autonomy and modes of directing organisation could all influence the size of the corporate centre. However, a closer examination of these influence factors leads to the conclusion that they affect the relative weight of vertical and horizontal co-ordination in the corporate centre. The resulting pattern of information-processing needs exerts its influence on the functions and size of the corporate centre. Thus, all these factors could be equally explained in the light of the relationship of the corporate centre's size with information flow and information-processing needs[4].

[4]This interpretation of the multiple influence factors suggests that these factors affecting the centre's size might affect information flow in the organisation, which influences the centre's size.

3. 6. Summary

This chapter has addressed the relationship between the size of the corporate centre and the vertical information flow between the corporate centre and lower management. Two key concepts were analysed: the functions performed by the corporate centre, and the factors influencing its size.

It examined the functions performed by the corporate centre with reference to those relating to information flow and processing. In dealing with these questions, the shaping of the corporate centre was analysed in a historical perspective. The corporate centre has evolved into an agency which discharges the functions of planning and resource allocation, controlling and auditing performance, and central service provision. Planning and control influences are closely related to vertical information flow.

In addition to this "functionalist" relationship between information needs and the size of the corporate centre, the sociological elements influencing them were examined. The overstaffing problem was briefly discussed. Comparison was made between the argument of this research based on information-processing capabilities and the explanation based on sociological elements. It was concluded that information-processing needs and capability are the main determinants of corporate centre size in Japanese firms, although due recognition was made, in many situations, to the explanatory power of sociological elements.

Authors who have empirically analysed the different types and sizes of corporate centres were reviewed. The factors selected by these authors in their analysis of types of corporate centres and sizes were discussed.

To sum up the discussions of this chapter: planning and control influences are important factors affecting the size of the corporate centre, since the size of the corporate function is a function of the information-processing capacity needed to cope with vertical information flow (resulting from the relative focus between planning and control).

The literature review demonstrated that no reported empirical research has explored the association between the size of the corporate centre and vertical information flow related to planning and control influences.

On the other hand, it was pointed out in Chapter 1 that the size of the corporate centre may be influenced not only by vertical, but also by horizontal information flow. It is, therefore, necessary to examine the literature regarding the relationship between the size of the corporate centre and horizontal information flow, before setting out to design our research method and samples, etc.

Accordingly, Chapter 4 deals with the relationship between the size of the corporate centre and horizontal information flow resulting from linkages among divisions or departments.

CHAPTER 4: HORIZONTAL INFORMATION FLOW AND THE CORPORATE CENTRE

4. 1. Introduction

The preceding chapter discussed the relationship between the size of the corporate centre and the vertical information flow resulting from planning and control influences. The next step is a review of the literature and reported research on the relationship between the size of the corporate centre and the horizontal information flow resulting from the linkages among divisions and departments.

This chapter is divided into four sections. Section 4. 2 examines the view advanced by Kanter (1983) about the creation of information flow in firms.

Section 4. 3 presents an analysis and synthesis of the literature on Japanese management in the light of Kanter's view. It is contended that Japanese firms are equipped with elements facilitating the creation of information flow.

Section 4. 4 discusses the horizontal information flow at lower management and especially the shop-floor level, and the mechanism for its co-ordination. Horizontal information flow at lower management levels is then reviewed in its relationship to the centralised administrative functions at the corporate centre. The communications perspective of Japanese management will also be discussed.

The substance of the discussion in this chapter is recapitulated in section 4. 5. It is contended that the size of the corporate centre is associated with the horizontal information flow because of the centralisation of administrative functions needed for its functioning.

Based on the contention described in Section 1. 3, Section 4. 6 discusses the implications of the information-processing and information flow perspective for practising managers. These implications will be further discussed in Chapter 8.

Section 4. 7. summarises the chapter.

4. 2. Network Formation for Information Flow

Kanter (1983) maintains that network formation is important for the exchange of information among divisions or departments. She enumerates several elements as the principal devices that aid network formation in firms: *frequent mobility* (including lateral moves), *employment security, extensive use of formal team mechanisms,* and *complex ties permitting cross-cutting access.*

A brief description of each of these devices outlined by Kanter (1983) is set out below.

Mobility across jobs

Mobility — circulation of people across jobs — is a prime networking device. Firms fostering information flow frequently move managers from one position to another. Such moves are lateral rather than vertical. In some firms, an average job tenure is about two years. In others, people move, for example, from the corporate centre to district sales office, from finance to manufacturing and from personnel to operations management.

Those who move clearly have an advantage or opportunity in terms of network breadth over those who do not. The organisation's *opportunity* structure — who moves, out of what jobs, and how often — has a direct bearing on its *power*[1] structure because of the impact on networks.

Frequent mobility is an opportunity rather than a threat to people only if it is coupled with overall employment security.

Employment security

The security that comes from the employees' expectation of permanent employment in the organisation creates not only higher flexibility and lower resistance to change, but also a willingness to invest in the future.

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[1]Kanter (1982: 203) equates power with access to information, resources, and support. Company data and company funds, access to high-level decision makers and company experts are some examples of power.

Employment security is concerned not only with one's own continued employment but also with that of others (Womack and Jones, 1994). In an insecure employment situation, people fear tackling projects that do not guarantee short-term results, but also fear investing their support in the projects of their colleagues for the same reason.

Teams

The frequent use of integrative team mechanisms at middle and upper levels not only encourages the immediate exchange of information as well as support but also creates contacts to be drawn on in the future. The organisational chart with its hierarchy of reporting relationships and accountability reflects only one reality. The "other structure," not shown on this chart, is an overlay of flexible, *ad hoc* problem-solving teams, task forces, joint planning groups, and information-spreading councils.

In these flexible and *ad hoc* teams, members are drawn from a diversity of sources. Many points of view are brought to bear on a problem. It is not reducing risk by spreading responsibility that is sought, but rather the better ideas that come from a clash and the integration of different perspectives.

Collaborative and consultative rather than unilateral decisions are the expressed norm in these teams. It is expected that, thanks to such an

integrative mechanism and company philosophies encouraging teamwork, managers will not reach decisions alone, without consulting others.

Complex ties and cross-cutting access

A formal structure acknowledging complex ties forces a great deal of inter-unit contact between managers. Although managers nearly everywhere complain about excessive meetings, such occasions provide them with opportunities to develop formal and informal working relationships with persons from other functions or disciplines. This encourages coalition formation, and helps managers to mobilise support or resources to complete an objective. It discourages over identification with one area and divisive politics.

Legitimacy of cross-cutting access helps managers to cross formal lines and levels in the organisation to find what they need — vertically, horizontally, or diagonally — without feeling that they are violating protocol.

Matrix designs, though not essential for cross-cutting access, can be helpful in legitimising it, for the organisation chart shows a number of links from each position to others. There is no "one boss" to be angered if a subordinate manager goes over his head or around to another area; it is taken for granted that people move across the organisation in many directions. Similarly, formal cross-area and cross-

hierarchy teams may provide the occasion and the legitimacy for reaching across the organisation chart for direct access.

Recapitulating, this section has argued that devices such as frequent mobility, including lateral moves, employment security, extensive use of formal team mechanisms, and complex ties permitting cross-cutting access help network formation, which enhances horizontal information flow.

The review of the literature on Japanese management in the next section will highlight the fact that the devices considered by Kanter as being instrumental for forming network to facilitate horizontal information flow are commonly found in Japanese firms.

4. 3. Network Formation for Information Flow: Japanese Management

This section reviews the literature on Japanese management in order to see how well Japanese firms are equipped with the afore-mentioned devices aiding network formation, and, therefore, horizontal information flow.

Mobility across jobs

Because of the life-time employment system which will be discussed in the following paragraph, Japanese firms tend to look ten to twenty

years ahead to determine this year's recruiting profile (Lauenstein, 1985). In addition to this long-term recruitment policy, job rotation is undertaken periodically to produce generalists (Odaka, 1986; Ouchi, 1981; Ouchi and Jaeger, 1978). Levine and Kawada (1980) also found how and why Japanese firms set up internal systems for key workers, to build up a highly versatile, loyal core of permanent employees in a particular firm. Standardised training is given to ensure that everyone is at least of average competence[2], which is essential to job mobility.

Employment security

The frequently-cited Japanese management practice of life-time employment (Abegglen, 1958; Hanai, 1979; Odaka, 1986; Tsuda, 1987) is a system with a high degree of job security in which the compensation of employees is largely determined by length of service, rather than by their particular job or their output in a given level[3]. A good part of their compensation is in the form of a bonus related to the overall success of the firm (Abegglen and Stalker, 1985).

Some authors believe that firms use life-time employment to create a sense of communal and familial relationships, but its real function might be to increase managerial power and control over performance. Long-term job security discourages employees from seeking for a job

[2]This does not mean that Japanese firms do not foster a group of élite employees. Hanada (1993) discovered that élite staff are chosen by the time they have reached the position of section manager (kacho) and groomed for a career in the firm.
[3]It is argued that Japan and the US are actually quite similar in terms of the amount and distribution of long-term steady employment. In Japan, steady employment occurs in the first half of a working life, whereas in the US it occurs in the second (Johnson, 1980).

elsewhere. Under this circumstance, employees tend to be obedient to such requirements from their companies as excess work, over-time, etc. Thus, rhetoric based on the concept of the firm as a "household" creates an image of culture-bound processes which conceals the reality of power beneath the surface (Fruin, 1980; Van Wolferen, 1989; Sullivan and Peterson, 1991).

Still, others believe that at least part of any commitment by workers found in the Japanese manufacturing economy derives from the wider implementation of certain elements of welfare corporatist control[4] (Dore, 1973; Lincoln *et al*, 1990; Ariga *et al*, 1992).

On the whole, this internal labour market system has had substantial benefits for the firms, which are generally large firms, that developed it. Levine and Kawada (1980) stress that these management practices in Japanese firms are rational choices by managers interested in financial returns, not the repetition of traditional solutions. Thus Levine and Kawada confirm Fruin (1980) in the sense that the Japanese system of life-time employment did not derive from family paternalism or cultural tradition. Values and traditions were used as rationalisations after the event.

Leibenstein (1984) contends that beliefs about the system may be just as important as the facts themselves. Therefore, the important thing about the life-time employment ideal is not whether people work for a

[4]Novel philosophies and practices will be introduced by managers if they are compatible with the culture which enables welfare corporatist control (Marsland and Beer, 1983).

given firm for their entire life-time, but whether they believe that this is likely to be the case and behave accordingly.

Teams, and complex ties and cross-cutting access

The consensus-building process, one of the characteristics of Japanese management, seems to serve the same purpose as integrative team mechanisms and complex ties do respectively for the encouragement of information flow at middle and upper levels and inter-unit contact between managers.

Consensus-building relates to the fact that Japanese management falls in a category generally described as the "organic type". Such management is performed by consensus (Yang, 1977). Japanese managers have fully accepted the fundamental premise of participative management, namely, that employees are capable of contributing and desire to contribute to the organisational requirements of a supportive supervisory climate (Cole, 1980).

In this climate Japanese try their best to make a decision by unanimous agreement without letting any difference of opinion come out into the open[5]. To this end, they usually resort to *nemawashi*, which literally means preparing for transplanting a large tree by cutting

[5]The strategic management of Japanese firms is characterised by the interaction of different management levels rather than being based solely upon executives' judgement (Kagono *et al*, 1985), which, however, does not mean that chief executives abdicate their leadership in strategic management (Shimizu, 1986). On the contrary, in Japanese firms which have risen to global leadership over the past twenty years, top management plays an indispensable role by creating "strategic intent" (Hamel and Prahalad, 1989).

off all but major roots a year or two before it is to be transplanted (Misumi, 1984). *Nemawashi* refers to the "political" process by which an unofficial understanding is reached before any final decision is made on a particular matter (Howard and Teramoto, 1981). In this decision process, decision makers comprehensively survey possible alternatives and resolve conflict (Takahashi and Takayanagi, 1985).

Combined with *nemawashi*, Japanese managers use the *ringi* procedure[6]. In this procedure a person holding a lower rank in the hierarchical system of an organisation drafts and introduces a proposal and circulates it through the chain of command for final approval. Since the proposal for decision-making is initiated by a lower-ranking person, this decision procedure is a "bottom-up" system (Misumi, 1984).

It has been pointed out, however, that the Japanese managers may prefer less participation (Daley *et al*, 1985), and that, instead of a mere bottom-up type, the decision procedure in Japanese firms is a "U" shape: it starts from top management and the views of lower rank employees are absorbed by top management (Kono, 1984; Shimizu, 1986).

A varying level of overall centralisation of authority in decision-making has been also reported. Spatial dispersion into multiple sites and a higher level of automation of technology increase the centralisation of authority; large company size, the increasing number of levels to which

[6]Takamiya (1980) holds that since the practice of delegating power has become common, the top management's approval through *ringi* has become unnecessary, and *ringi* has come to be used only as a means of reporting to top management.

size gives rise, and greater task variety have the opposite effect, namely, they lower somewhat the levels at which decisions can be made (Marsh, 1992).

In the light of Kanter's (1983) work, this section has determined the extent to which Japanese firms are equipped with the elements aiding network formation, and, therefore, information flow.

The following section discusses horizontal information flow at the lower management level in Japanese firms and the mechanism for its co-ordination. Horizontal information flow at lower management level is then reviewed in relation to the centralised functions at the corporate centre.

4. 4. Information-Processing Structure of Japanese Firms

In line with the argument in the preceding section to the effect that Japanese firms are equipped with those devices necessary for forming network and creating information flow, Aoki (1986; 1988; 1993) suggests that the efficiency of Japanese firms may be largely due to the quality of the information-processing structure within them[7]. This structure is characterised by rapid *intrafirm* horizontal communication, which is necessary for the co-ordinated adjustment of constituent operations in reaction to "global market shocks", *e.g.*, market fluctuations, as well as the decentralised handling of "local shocks", *e.g.*, machine breakdown, to minimise their impact on the system as a whole.

The quality of such an information-processing structure depends to a great extent upon the information-processing capabilities of the employees who operate the system. The way in which such human resources can be accumulated and maintained within a firm is a question of providing employees with the incentive to develop the skills, knowledge, expertise, and co-operative attitude needed to operate the horizontal informational structure[8] (Aoki, 1988). This view is substantiated by Carney (1986) from the perspective of

[7]In a similar vein, based on a survey of 1000 firms in Japan and the US, Kagono *et al* (1985) concluded that Japanese firms employ numerous mechanisms which encourage frequent interactions horizontally and vertically, and place tremendous emphasis upon personal interactions within and between groups.

[8]This is also an example of "invisible resources," as termed by Itami (1983). Examples of invisible resources include: know-how of marketing, brand name, management skills, corporate culture, and so on. These resources are important mainly because their availability in the market is much more limited than other "visible resources" such as physical or monetary resources.

communications process in companies. He claims that Japanese management is characterised by advantages contributed by "little brains" that are autonomous work groups as well as by the empowerment of "self" (*i.e.*, individual worker).

Accordingly, based on Aoki's foregoing argument, the first part of the present section (4. 4. 1) discusses the information-processing structure of Japanese firms. Whilst the discussion mainly refers to shop-floor level operations, the information systems that are considered exhibit a generic element of a co-ordination pattern operating throughout different levels in Japanese firms. The second part (4. 4. 2) discusses the generalisability of shop-floor level information flow. This is followed, in the third part, by a discussion of the incentive schemes used by Japanese firms to develop skills and co-operative attitudes among employees.

4. 4. 1. Information-processing structure at the shop-floor level

The way Japanese firms organise work at the shop-floor level, and co-ordinate operations among shops, influences their information-processing structure.

Flexibility in job design

Job classification in Japanese firms is simple and broad: demarcation is fluid and ambiguous and assignments are flexible. The degree of specialisation is low. For example, Japanese firms do not have a specialised reliefman to cope with absenteeism. Instead, they rely on mass relief or the *ad hoc* reassignment of jobs at the discretion of the foreman. Inspection positions are often rotated among operating workers on the shop-floor. As a result of broad job classification and flexible job assignments, workers tend to undertake a wide range of jobs and are given an opportunity to develop different skills.

Some factories have taken the fluid and flexible approach a step further by introducing regular job rotation. In most instances where the job rotation scheme is used, even inexperienced workers may be assigned to a very difficult job, in which case the most experienced workers may assist in a side-by-side position. Job rotations allow every worker to become familiar with the whole work process at the shop. The job rotation system therefore facilitates "knowledge sharing" among workers in that the knowledge possessed by a single worker is extended beyond the sphere of a particular job. Thus, there is considerable overlap in the knowledge of individual workers of different status on the shop-floor.

The wider range of job experience in general and the regular rotation system in particular sacrifice some economies of specialisation. The loss in economies of specialisation is compensated for by the following

benefits, however. In the rotation system, the diffusion of skills from senior to junior workers may be continuously facilitated on an informal basis through the assistance and advice of senior and imitation by junior workers. Those nurtured in a wide range of skills may be able to understand why, for example, defective products have increased, and may be able to devise and implement measures to cope with the problem and thus prevent it from recurring. This can be done without much "outside" help from specially designated craft workers, reliefmen, repairmen, and other specialists. Thus, a wide range of job experiences helps to develop workers' intellectual skills to cope with irregular events and beyond those necessary for routine operating tasks. Therefore, from the perspective of the information system, benefits of collective learning consist in enhancing workers' capacity for processing information relevant to shop-floor efficiency (Womack and Jones, 1994).

Inter-shop co-ordination

Inter-shop co-ordination is related to workshop organisation. Whereas job specialisation on the shop-floor in typical Western firms is coupled with hierarchical co-ordination of shops by managers as specialists, autonomous problem solving on the shop-floor in Japanese firms is coupled with horizontal and direct dealing among shops in inter-shop co-ordination. In other words, in Japanese firms, the co-ordinating and operating tasks at the shop-floor and the inter-shop levels tend to be integrated.

The horizontal and direct dealing among shops in inter-shop co-ordination can be most effective when the inevitable unexpected event occurs. An unexpected event could be a change in the final demand (demand shock), or an in-process shock in a particular shop or between particular shops. Its repercussions could be far-reaching, *e.g.*, quality defects in part production, malfunction of machines, breakdown in transport of semi-products. It is normally impossible to specify *ex ante* inter-shop transaction plans free of unexpected events, as each transaction plan is contingent upon the occurrence of a probable particular emergency. Thus such events often have to be dealt with *ex post*. In Japanese firms the centralised scheduling of production provides a general framework only for a certain period of time. As a supplement to the centralised plan, horizontal and direct co-ordination among interconnected shops governs the actual transfer of materials, parts, and in-process products. This co-ordination fine-tunes actual final output for changing market conditions and in-process

emergencies. The lack of a central office to control and expedite the flow of materials among shops is a conspicuous feature of the assembly factory in Japan.

The kanban system

The *kanban* system[9] provides an example of this horizontal and direct co-ordination. The term *kanban* refers to a card placed in a vinyl envelope. In implementing the daily production schedule, the final assembly line places a production-ordering *kanban* containing the data about the needed quantity of each type of part or semi-product on a post adjacent to the relevant inventory store whenever it withdraws its inventory. Upstream shops are supposed to adapt their production according to demands by their downstream shops, as indicated by the *kanban*.

In the *kanban* system, a tentative production schedule may be worked out by the central planning office on the basis of market forecasts at a regular interval — for example, once every two weeks — and every shop is informed of its production plan. But this centralised schedule provides each shop with only a general production guideline for that period. Information regarding actual customer demands for varieties of products is used for fine-tuning the actual production schedule in a

[9]Differences in manufacturing practices in the US and Japan discussed were: Quality management (Garvin, 1983; Hayes, 1981; Juran, 1978), quality circles (Cole, 1980; Takeuchi, 1981), inventory control (Abernathy *et al*, 1981; Schonberger, 1981), and manufacturing innovation (Cusumano, 1988) have been studied.

However, it is the *kanban* system that is considered to be instrumental in the success of Japanese manufacturing industry (Monden, 1983; Womack *et al*, 1990).

shorter time frame. The important point is that this up-to-date production schedule, based upon a two to three day short notice from sales department, is fed only into the final assembly line; thus, because of the use of *kanban*., communications necessary for fine-tuning production at upstream shops, to match the daily schedule of final outputs, need not be channelled through the administrative office.

Although the *kanban* system may appear to be a rather crude information system, it is an effective mechanism that facilitates an intricate system of production which may require multiple component units to respond to unpredictable consumer demand for a variety of final outputs, while keeping the amount of in-process inventory as low as possible.

An essential feature of the *kanban* system is that the fine-tuning of production is performed in response to evolving market conditions without the intervention of the administrative offices above the operating units. Thus, the system exhibits a generic element of a co-ordination pattern operating in Japanese firms — a direct, horizontal co-ordination among operating units, which is often informal and bypasses hierarchically layered administrative offices.

Nevertheless, two sets of technological and market conditions of the firm ought to be considered under which manufacturing operations can be co-ordinated in the *kanban* system for productive and informational efficiency.

First, the function of the *kanban* system is to integrate the flows of production and information for the purpose of responding to market fluctuations with minimal inventories. If a product variety is limited or market demand is very stable, the saving of inventory cost by fine-tuning final outputs in response to market signals through horizontal co-ordination may be trivial. On the other hand, horizontal co-ordination without the centralisation of information may not be effective for large changes in demand. According to Monden (1983), demand variations of about 10 percent can be handled by changing only the frequency of *kanban* transfers. However, larger seasonal changes in demand, or a larger change in actual monthly demand over the predetermined plan, requires that all of the production lines be re-arranged administratively.

Second, the capacity of the worker to cope with changes in product composition and local emergencies may be specific to the global framework established through strategic business decisions of top management such as product mix and factory design. Such capacities may be effective to cope with continual and incremental changes within that framework, but not with drastic changes in market and other conditions. It may be very costly to develop versatility in workers to enable them to cope with a very wide range of changes, instead of recruiting specialists from markets as the need arises. On the other hand, if the market and other environments are very stable, workers' information-processing capacities may not be used effectively and may become redundant resources. Therefore the development of wide-

ranging skills may be most effectively used for continual environmental changes.

Efficiency of horizontal co-ordination

The efficiency of horizontal co-ordination like the *kanban* system involves two aspects. First, it concerns administrative efficiency. In response to market fluctuations, machine breakdown, etc., shops can function as communication nodal points and require no administrative apparatus on top of the production structure for operational co-ordination. Thus, manufacturing operation and co-ordination are integrated.

Second, it refers to "localised horizontal co-ordination." It is an important characteristic of Japanese firms that no manager specialises in inter-shop co-ordination; the task of inter-shop adjustments that cannot be automated by regular *kanban* circulation is relegated to direct negotiation between foremen of the relevant shops.

A possible advantage of localised horizontal co-ordination *vis-à-vis* hierarchical co-ordination would be the saving of time needed for communication and computation via the administrative office and the quick use of "on-the-spot" information concerning emergent events. For example, defects in in-process products, breakdowns in transport, and so on, are most likely to be recognised first by the directly relevant shops and they can react or propose to react quickly. To the extent that

shops understand the nature of their own work processes as well as those of neighbouring shops, they may be jointly able to devise a good solution to emergent problems by making use of first-hand information about what is actually happening at the shop level.

However, there are some prerequisites for localised horizontal co-ordination to function well. To achieve a local optimal solution among the shops concerned it is necessary that individual shops internalise goals appropriately "decomposed" from the overall organisational goal, such as local cost minimisation, if the overall objective is the minimisation of total costs in the factory. In addition, if shops in localised horizontal co-ordination want to reach the best solution, it is necessary for them to obtain information on problems and to be equipped with problem-solving capacities at the shop level. If shops do not fulfil these requirements, then, the efficiency of localised horizontal co-ordination in response to market fluctuations, machine breakdown, etc., is a relative one.

In brief, the internal efficiency of Japanese firms may be largely due to the quality of the information-processing structure institutionalised within it. That structure is characterised by rapid *intrafirm* communication. The quality of such an information-processing structure depends on the information-processing capability of the workers. Accumulating and maitaining such human resources within the firm is a matter of providing employees with the incentive to develop the skills, knowledge, expertise and co-operative attitude.

Centralised personnel administration

The centralisation of company-wide personnel administration in Japanese firms may explain why Japanese firms are able to delegate more decision-making authority to lower management in operating and co-ordinating spheres. Although information-processing and decision-making are dispersed and decentralised in Japanese firms, employees are monitored for the development of contextual skills over their entire career in the firm, and their records are put into the organisational memory formally and informally. Those employees who have established a reputation over time for developing contextual skills, which they still appear capable of developing, may be given better opportunities for promotion. Employee behaviour is thus moulded to be compliant with the organisational orientation in the long run.

In Japanese firms, personnel administration needs to be centralised not only for the purposes of control, but also for the efficient utilisation of the contextual skills of the worker nurtured in the non-hierarchical information-processing structure. The centralised approach to personnel administration is necessary, for instance, for a systematic in-house programme of career development or for the redeployment of workers released from an abandoned work process. This is related to the *internal* labour market which refers to a system of inter-related and institutionalised practices by which a sector of the job market and its related prices or earnings has become closed to potential employees who do not possess certain attributes (Loveridge,

1983). Their forms and rationales display a cross-national diversity which indicates a difference in employer strategies and employee response (Loveridge, 1983). In the case of Japan, the centralisation of personnel management creates a group of core employees, who are protected by a company-wide work union.

Since personnel assessment is a standardised procedure and files are kept and utilised centrally, the personnel department occupies a strategic position in the management of Japanese firms.

Thus it appears that the decentralised approach to information processing in the operational and co-ordinating sphere needs to be associated with, and complemented by, a centralised approach to personnel administration for the purposes of organisational effectiveness.

4. 4. 2. Generalisation of the information-processing structure

Two more points need to be added to the above argument. First, the discussion of the centralised approach has been limited to personnel management. Further scrutiny will determine whether this central approach is applied to other operational administrative functions. Second, as the argument has so far revolved around the shop-floor level co-ordination, it is necessary to examine whether the horizontal co-ordination prevailing in the shop-floor level can be extrapolated to middle management.

Centralised administration

Kono (1984) observes that centralisation is not limited to personnel management in Japanese firms. In a competitive environment, strong marketing and production functions are necessary to ensure that the products are of high quality and low cost in order to strengthen the sales channel. These functions may be more vigorously performed if there are strong centralised staff departments in the corporate centre which collect wider global market information, and co-ordinate and integrate different divisions or departments. As a consequence, the corporate centre in Japanese firms is strong, irrespective of either the

level of diversification or the functional or divisional organisational structure[10].

Horizontal co-ordination at middle management

Concerning the general applicability of the co-ordination mechanism and information flow, Aoki (1988: 24) noted that:

> The *kanban* system can be only used to control production processes with special technical characteristics. However, the system exhibits a generic element of a co-ordination pattern operating in Japanese firms, the direct, horizontal co-ordination among operating units, which is often informal and bypasses hierarchically layered administrative offices.

Kanai's (1991, 1993) survey of middle management in Japanese firms points to a similar horizontal co-ordination pattern. Kanai examined two "task contingencies" that middle managers of Japanese firms face: task uncertainty and task dependence. The former has to do with the gap between the amount of information one has in completing the task and what one already has from one's organisational position (Galbraith, 1973). The latter is defined as the gap between information, resources and other supports that are required to complete the task and those which an organisational position automatically brings to a manager. Since power is instrumental in mobilising information,

[10]The Japanese approach to strategic issues is soft, qualitative and sometimes almost spiritual. The responsibilities of a Japanese CEO are to articulate a vision of the nature of his firm, the direction it will pursue, and its long-term goals, expressed in terms of markets, growth, technologies, products and industry position (Lauenstein, 1985; Hammel and Prahalad, 1989). These statements of vision, direction, and goals represent the official policy of the firm, which all employees are expected to support (Lauenstein, 1985).

resources, and other supports, task dependence is, in essence, the indicator of the degree of power gap (Kanai, 1993).

Kanai's (1991, 1993) finding is that as a contingency confronting middle managers, task dependence is much more important than task uncertainty. This means that a manager who, for example, initiates and implements a brand new management control system on his own initiative is quite likely to suffer from power gap. In implementing something new to the organisation, albeit compatible with the existing organisational goals, it is necessary to obtain information which is not automatically available to his organisational position. The manager has to mobilise resources beyond the discretionary budget, and gain informal support from peers in other departments as well as from the bosses. Thus, horizontal co-ordination is keenly needed at middle management level.

Nonaka (1990) found this same information co-ordination pattern in the innovation process of Japanese firms. Nonaka postulates that information redundancy is fundamental to the innovation process. Information redundancy refers to a condition where some types of excess information are shared in addition to the minimal amount of requisite information held by every individual, department, or organisation in performing a specific function. While this excess information could be considered superfluous from the standpoint of large-scale information processing efficiency, from a qualitative standpoint such an excess enriches the "meaningful" functions of the organisation. When excess information is shared within the

organisation, it clarifies the meaning of the specific information required within the purview of distinct individuals and groups. Information redundancy stimulates the creative powers of information and is linked to the generation of information with new meanings.

Nonaka (1990) emphasises that in the innovation generation process in Japanese firms, the concept of the division of labour, in the sense that areas of activities are clearly specialised, is not completely adopted. Rather, every phase of innovation generation is loosely connected and overlaps, expanding and contracting with the unrestricted elasticity of diversity. As each phase is autonomous yet loosely linked, the innovation generation process induces interaction between phases and promotes an abundant sharing of information.

Structurally, Japanese firms seem to attempt to create overlaps or linkages between divisions or departments. Less than half of 874 firms surveyed by the Japan Development Bank (1989) had adopted a divisional form with complete business autonomy. Even those that had divisionalised, more often than not, had created incomplete divisions, namely, divisions focused on the marketing function but without the production function, or divisions focused on production to the exclusion of the marketing function, etc.

The centralised approach to administration and decentralised one to horizontal co-ordination in Japanese firms are better depicted "in the round" if contrasted with the different approaches in American firms (See Figure 4. 1.). Aoki (1988) holds that American firms are embedded

in a societal framework that emphasises egalitarianism, and consequently workers are more mobile, moving between firms in search of better individual opportunities. In this environment, management's authority is intrinsically insecure and may have to be reasserted through the institutionalisation of a hierarchical information-processing structure within the firm, with the threat of discharge as an important means of discipline for supervisors. Conversely, the development of a functional hierarchy based on fine job specialisation and a well-defined classification of jobs has helped create standard job markets, external and internal to the firm, and has encouraged workers to become more mobile. Such a development may be called the decentralisation of personnel administration.

Figure 4. 1.: Comparison of the information and personnel management between Japanese and American firms

		Information	
		Centralised	Decentralised
Incentives for personnel	Centralised		Japanese firms
	Decentralised	American firms	

Source: Adapted from Aoki *et al* (1989: 56)

4. 4. 3. Incentive scheme: the "ranking hierarchy"

To be effective in the horizontal co-ordination of operations, workers must not only be able to handle a specialised task, but must also be capable of bargaining smoothly with their peers in inter-shop issues and skilfully mediating between the conflicting demands of subordinates. Therefore, such workers need to develop an understanding of and insight into the full range of organisational activities. Informal personal networking with colleagues across shop, unit or departmental boundaries serves as a valuable asset since it allows the individual to collect information, identify problems, and reach agreements in the firm. Such a broad understanding and networking can be developed by experiencing various operational and managerial tasks within the context of a single firm.

It may therefore be concluded that Japanese firms assess the value of an employee, both blue-collar and white-collar, by his or her *contextual skills* — a relatively wide range of integrative skills that have been developed and are useful in a non-hierarchical information-processing structure in which information flows horizontally.

Japanese firms have developed a system of incentive schemes with which to evaluate and reward employees on a long-term basis for competing in the development of such contextual skills, while using them co-operatively. Under such schemes, the firm can identify slow learning, low productivity, low motivation, and uncooperative workers by actual observation and differentiate them in pay and status over the

long run, while attempting to lock in fast-learning, highly productive, highly motivated, co-operative workers by discouraging them from quitting in mid-career. This system of incentive schemes has three important elements: (1) the wage system, which combines seniority and merit rating, (2) internal promotion discriminately applied to employees on the basis of merit rating[11], and (3) a lump sum payment at the time of (mandatory) separation.

The incentive scheme systems in Japanese firms are characterised by a notion of *ranking hierarchy*. This is a system of ranks wherein the remuneration paid to an employee depends upon his individual rank and in which his internal promotion from lower to higher rank, is based on a certain formalised standard.

Ranking hierarchy

In the *ranking hierarchy* structure, ranks are not directly associated with particular jobs. Employees in the same rank may perform different tasks, and employees in different ranks may perform the same task. Thus rank ordering is not congruent with task assignments. Remuneration to employees is associated primarily with their ranks as such, and not with job or individual output.

[11]Hanada's (1993) survey on the promotion system in Japanese firms showed that a severe merit rating system had been traditionally applied for promotions, although many firms had tried to disguise such "reality" so as not to demotivate "dropouts" at early stages of their career.

Newcomers are placed at the bottom of the *ranking hierarchy* and remunerated uniformly regardless of their tasks and potential productivity at the time of entry. However, the implicit understanding at the time of recruitment is that employees are selected for higher ranks according to their observed performance within the firm over long periods, subject to the threat of costly "separation" in the case of misconduct.

The *ranking hierarchy* system operates distinctly in the short and long runs. In the short run, for example, one year, the employees' basic remunerations are fixed *ex ante* according to their rank, but are not directly related to their job or output performance. However, they are promoted over certain periods on a rank-by-rank basis as their performances meet certain standards. In any one period, they move up one rank, at most, but a differential arises among employees in the long run because of discriminatory treatment with respect to the speed of promotion. This results in a substantial dispersion of individual earnings and separation payments. An employee whose performance does not meet the required standard of his rank is separated in mid-career and must find a job elsewhere.

The notion of a hierarchy as a incentive system described above can obviously be distinguished from that of hierarchy in Western firms in which hierarchy functions as the vertical information-processing structure. It is based on the efficiency attained through job specialisation and rational hierarchical control. In a vertical information-processing structure, lower ranks (subordinates)

communicate with others only via higher ranks (superiors), and the superiors have authority over their subordinates in the sense that they give subordinates commands.

Efficiency of the ranking hierarchy

It now remains to see how the *ranking hierarchy* copes with five incentive problems facing any large business organisation. First, how can the firm provide incentives that will discourage individual employees from "shirking"?

Alongside the labour market in which employment contracts for entry into the *ranking hierarchy* are transacted, there exist markets for fairly standardised jobs that do not require as much firm-specific skill. In these markets for standardised jobs, contracts provide less generous regular pay increases and separation payments, albeit possibly a higher starting pay. Such jobs are found more frequently in the service, retail, and wholesale industries, where the mobility of workers is higher. Also, with the growing presence of Western multinational firms in Japan, there are more alternative employment contracts for managerial and highly skilled white-collar employees that offer higher initial pay, but less job security.

Applicants hoping to enter the *ranking hierarchy* of Japanese firms that are characterised by relatively low initial pay, and relatively high *intrafirm* upward mobility, are the types who are willing to endure the

long training needed to accumulate contextual skills and also to wait for the financial returns, which are realisable only after long periods. Once revealed, that information can be used both to provide appropriate rewards and to assign employees to appropriate tasks, including costly training. Thus, the coexistence of employment contracts for relatively standardised jobs (alongside those for entry to the *ranking hierarchy*) functions as a "self-selection" mechanism which copes with the adverse selection problem.

Second, how can the firm select employees who are highly productive and highly motivated from among many candidates?

As indicated above, substantial costs are imposed on employees if they cannot meet the standard required by their ranks, since they will be separated in mid-career and must find a job elsewhere. The separation does not have to be an outright firing. Although appearing to be voluntary, it may actually be imposed through pressure from the supervisor and peer group, or both. In any case, mid-career separation involves a financial penalty because of the disadvantages attaching to the separation payment. Furthermore, because of adverse selection, potential employers may judge the attributes of mid-career job changers by their personal job history. The fact that they were separated from their internal promotional mechanism in mid-career may suggest that they did not perform satisfactorily in their previous ranks. Because of this "reputation" effect, they may only get jobs of lower rank and their life-time perspectives may be lower than if they had advanced within the promotional hierarchy of their original firm.

The cost of mid-career separation therefore functions as a device for enforcing discipline on employees after entry.

Third, how can the firm promote employees' integrative learning and discourage employees who have acquired contextual skills useful to the firm from quitting early?

In order that the *ranking hierarchy* conforms with labour market competition, it must be incentive-compatible in two senses. First, it must be in the interest of the firm not to terminate the contract, provided the employee performs at the required level or higher, that is, the required level of performance at each rank must yield output greater than the level of pay associated with the rank. Second, given the potential for dismissal involving costs from the loss of reputation and other benefits, it must be in the interest of employees at each level to perform at the required level, provided that the firm continues to offer the associated pay.

With the above-mentioned incentive scheme built in, the *ranking hierarchy* may be interpreted as a device for promoting learning and preserving costly skills within the firm. Suppose that the current productivities of the new entrants to the *ranking hierarchy* are indistinguishable and that all are placed at the bottom, but that they differ in potential ability, which may be realised only through learning. As learning accumulates, the potential is gradually realised, and those performing better get promoted. At the same time, those who fail to develop their potential incur costs in that they sacrifice the higher life-

time earnings associated with higher ranks or they risk being discharged in mid-career. Employees may be motivated to develop their potential, striking a balance between the cost of "shirking" learning and the benefits of promotion.

Fourth, how can the firm promote productive co-operative behaviour in team production?

Suppose that there are situations in which it is efficient for employees to engage in two types of effort: work that increases one's own output and work that increases someone else's output. That is, shifting some effort to helping others would increase others' output more than it decrease one's own. If the *ranking hierarchy* is of the competitive type, there is no incentive for individuals to help someone else, because it is costly in terms of one's own output to contribute to the other's output, and such help thereby hurts one's own chances of promotion. If the principle of reciprocity develops under the *ranking hierarchy* so that a person's help is reciprocated by another's help, an efficient collaborative mix will occur. And, in a relatively wide range of situations, it is expected that everyone will be better off under the *ranking hierarchy* than under the competitive environment. Thus the *ranking hierarchy* in Japanese firms may act as an incentive which promotes efficient co-operation.

Summing up, two issues have been discussed in Section 4. 4: the information-processing structure and the incentive system in Japanese firms.

The information-processing structure of Japanese firms is horizontal. Decisions involving a high degree of uncertainty, such as investment and research and development, as well as those responding to a high degree of irregularity are placed under hierarchical control. However, once an overall framework for production is laid down by such strategic decisions, "decentralised" horizontal informational exchanges and the semi-autonomous co-ordination of operations by relevant subordinates are emphasised.

In the "decentralised" horizontal structure, production decisions are co-ordinated among semi-autonomous shops (interrelated operational sub-units) that have only incomplete knowledge of technologies at the outset, but gradually become capable of responding to emerging events more quickly by better use of "on-the-spot knowledge." In order to prevent the localised use of the "on-the-spot knowledge" from causing inefficient haggling between sub-units, the sharing of knowledge among neighbouring sub-units (among workers and/or shops, etc.) is emphasised. To help foster the sharing of knowledge, workers rotate among various jobs with some frequency within, as well as beyond, workshops. Through this practice, workers are gradually made familiar with the whole work process and become capable of coping with unexpected emergencies.

The co-ordination of production between workshops to facilitate a smooth production flow along the production stream is often done by

horizontal communication without the intervention of a supervisor, as the *kanban* system at the Toyota factory exemplifies.

The ability of sub-units to co-ordinate their decisions between themselves in a way actually consistent with the organisational purpose would be limited, if they had only partial understanding of the whole mechanism operating within the firm. This understanding can be enhanced by learning by doing, but is costly in terms of time. The accumulation of such understanding as well as sharing of knowledge can be fostered only over time.

The incentives Japanese firms use to foster information-processing capabilities and sharing of knowledge of employees as well as to enhance employees' interest in identifying themselves with their firms are the *ranking hierarchy*, namely, a hierarchy as a system of ranks, with the remuneration paid to an employee depending upon the individual's rank and with internal promotion from lower to higher ranks, based on a certain formalised standard.

4. 5. The size of the corporate centre and horizontal information flow

Recapitulating the discussions in this chapter, Japanese firms are equipped with the devices for forming networks, necessary for horizontal information flow and co-ordination. As the quality of such an information-processing structure depends on the information-processing capabilities of employees, they are provided with the *ranking*

hierarchy incentive to develop skills, knowledge, expertise, and a co-operative attitude towards a horizontal information-processing structure.

Likewise, from a viewpoint of organisational structure, Japanese firms seem to foster the creation of the need for horizontal co-ordination. Fewer Japanese firms have divisional forms. Those which do so are more functional and less self-contained. Even those that had divisionalised had created incomplete divisions. Such incompleteness results in linkages, which are sharing of common clients, of common production technology, etc., among divisions or departments. Linkages require co-ordination.

Thus, co-ordination in Japanese firms is horizontally made through information exchange among divisions or functional departments. It means that information exchange and co-ordination among them are decentralised, but that the decentralised approach is found to be associated with a centralised approach to administrative management, which leads to a larger size of the corporate centre in terms of its staff, a prerequisite to cope with the management need.

From this contention, it may be assumed that the size of the corporate centre in Japanese firms is likely to be associated with horizontal information.

4. 6. Implications of the Information-Processing and Information Flow Perspective for Practising Managers

In Chapters 3 and 4, information-processing was reviewed as a contingency factor influencing the size of the corporate centre. The relationships between centre's size, and vertical and horizontal information flows were addressed. What implications for practising managers could the information-processing and information flow perspective have?

As mentioned in Section 1. 3, there could be two implications: (1) for the internationalisation process of Japanese firms, and (2) for structural changes that were taking place these past years.

In anticipation of the discussions in Chapter 8 (Section 8. 4.) in which these implications will be addressed in detail, key points in the discussions are outlined below.

Internationalisation process

As discussed in this chapter, "contextual skills" fostered by years of service in a firm are an essential part of horizontal information flow in Japanese firms. Contextual skills signify a relatively wide range of integrative skills that have been developed and are useful in a non-hierarchical information-processing structure in which information flows horizontally.

This has two implications related to the internationalisation process. Japanese firms must learn how to cope with the information flow between overseas operations and the corporate centre. Because of the contextual skills requirement, Japanese firms would have to second some of their Japanese staff in key positions for communications. Section 8. 2. 2 describes how a Japanese automobile manufacturer coped with this issue, not only basing a whole department near a market outside Japan, but also creating a new unit in Japan to process information flow.

Questions raised as a consequence are as follows: Can Japanese firms internationalise their management structure of overseas operations? Can they take advantage of the human resources of the countries where they establish their operations?

Another issue related to the internationalisation process concerns the transfer of production technology, typically the Just-in-Time System. Again, the question is how important or essential contextual skills are in the transfer and implementation of Japanese production technology. As the appreciation of the yen against the dollar was steep these last years, driving manufacturing bases outside Japan, this is an important issue.

Process re-engineering and corporate down-sizing

Management scientists are increasingly aware of the importance of knowledge-creation and of the essential role played by information flow

in this knowledge-creation process if firms are to survive an intense market competition. Nonaka (1996) emphasises that firms must become "agile" and gain competitive advantages in agile delivery of goods and services through knowledge-creation. Nonaka and Takeuchi (1995) argue that the creation of new knowledge is the product of a dynamic information flow among front-line employees, middle managers, and senior managers.

On the other hand, many firms have undergone re-engineering and down-sizing in recent years. Process re-engineering does not necessarily mean down-sizing, but in the majority of re-engineered firms down-sizing took place, as a consequence of process re-engineering, especially of the indirect workforce including the corporate centre (Hammer and Champy, 1993).

Process re-engineering and down-sizing, therefore, affect the size of the corporate centre and, on account of it, entail the loss of the corporate memory including contextual skills. Then, how does the dismissing of the staff who have contextual skills affect the capacity to process information flow?

A survey by the American Management Association (AMA) quoted by the Economist (1996b) reports that fewer than half of those companies that had down-sized since 1990 went on to report higher operating profits in the years following the move; even fewer saw improved productivity. Unpublished research by Monitor cited also by the Economist (1996b) found that nine out of ten firms that had outperformed their industries

over a ten-year period had "stable" structures, namely, without down-sizing and, therefore, without the loss of corporate memory embodied in their employees.

The Economist (1996c) suggests that Japanese firms may have found a way to avoid the loss of the corporate memory as a consequence of down-sizing. They make use of three devices to transfer contextual skills: (1) *sempai-kohai* arrangement, *i.e.*, "older-younger" bonding, (2) quality-control circles, and (3) the suggestion box.

First, "older-younger" bonding between male employees is encouraged by Japanese firms. Though often no more than a few years older, the senior member (*sempai*) becomes responsible for guiding the younger person (*kohai*), passing along expertise for doing the job from one generation to the next. The bonding with the immediate boss—done mostly in bars after work or on the golf course at weekend—is as strong on the shop floor as in the office.

Second, Japanese companies keep their institutional memory intact through quality-control circles. The meetings held as an activity of quality-control circles are far more than a mere "talking-shop" for resolving production problems. It is part of much broader *jishu kanri* (voluntary management) approach that Japanese companies use for nurturing satisfaction and creativity among their staff.

Despite being voluntary, after-hours meetings in Japan are characterised by formal goals and strict agendas. Much use is made of

statistical material, and of charts showing causes and effects. The person voted group leader "invariably" receives special training from the company on how to keep records, write reports, assign tasks and chair discussions. One thing is of a paramount importance: the findings are carefully documented so newcomers can learn what has gone before.

Third, the suggestion box is a device widely used in Japan. In the West, companies tend to make much of providing heavy financial rewards for the individual who comes up with a money-saving idea. In Japan, the focus is on capturing all the undocumented procedures going on without foreman's being aware of them.

4. 7. Summary

This chapter started by examining the view advanced by Kanter (1983) about the creation of horizontal information flow in firms. Kanter maintains that network formation is important for the exchange of information among divisions or departments, and enumerates several elements as the principal devices that aid network formation in firms: frequent mobility, including lateral moves; employment security; extensive use of formal team mechanisms; and complex ties permitting cross-cutting access.

In the light of Kanter's framework, an analysis and synthesis of the literature on Japanese management was made to demonstrate that Japanese firms are equipped with elements facilitating the creation of horizontal information flow.

Horizontal information flow at lower management levels was reviewed from the standpoint of its relationship to the centralised administrative functions at the corporate centre. The horizontal information flow relates to the information-processing structure and incentive system in Japanese firms.

The co-ordination of production between workshops in order to facilitate a smooth flow along the production stream is often effected by horizontal communication without the intervention of a supervisor, as the *kanban* system at the Toyota factory exemplifies.

Japanese firms use incentives to foster information-processing capabilities and the sharing of the knowledge possessed by employees, as well as to enhance employees' interest in identifying themselves with their firms. These incentives are the *ranking hierarchy*, namely, a hierarchy as a system of ranks, with the remuneration paid to an employee depending upon the individual's rank and with internal promotion from lower to higher ranks based on a formalised standard.

It was argued that Japanese firms can "decentralise" decision-making and co-ordinating authority to lower management in operating and co-ordinating spheres, thanks to the centralisation of personnel administration. Although information processing and decision-making are dispersed and decentralised in Japanese firms, employees are monitored for the development of contextual skills over their entire

career in the firm, and their records are put into the organisational memory formally and informally.

The foregoing arguments concerning the centralisation of personnel administration can be extrapolated to the centralisation of other administrative functions and the shop-floor level horizontal co-ordination to middle management.

Finally, it was contended that, as (a) the horizontal information flow is linked to the centralisation of functions at the corporate centre, and (b) the centralisation supposes the influence in the centre's size, such size is associated with the horizontal information flow.

CHAPTER 5: RESEARCH ISSUES

5. 1. Introduction

In this chapter the concepts presented in the literature review of Chapters 2, 3, and 4 are used. They are summarised and synthesised to draw up general propositions, which are then formulated as specific hypotheses.

The chapter starts with a definition of the scope of the research. Thereafter, the relationships in Japanese firms between the size of the corporate centre and various variables relating to information flow, both vertical and horizontal, are established by way of the hypotheses for the present research. These hypotheses constitute the issues for the present research.

5. 2. Scope of the Present Research

Changes in the environment lead to changes in the strategy and organisational structure of firms (Figure 5. 1.) The changes in the environment do not directly bear upon firms. They go through different intermediate stages. As Porter (1986) points out, these changes alter the type of competition in every industry. Firms have to adapt their strategies to the new competitive pattern if they are to survive and grow. On the other hand, changes in strategies require modifications in the organisational design of the firm in such aspects as structures,

systems and processes. Finally, the "goodness" of the strategy and the quality of its implementation are translated into results in terms of growth and profitability as measures of the performance of the firm in the market.

Figure 5. 1.: General framework and scope of the research

Level of influence	Environment	Industry	Strategy	Structures, Systems, and Processes	Results
	Changes in business environment ⟹	Type of competition ⟹	Strategic answer to competition ⟹	Implementation ⟹	Growth and profitability measurement
pe of riables	Structure Variables		Behaviour Variables		Performance Variables

Note: The scope of the present research lies in the shaded area.

In terms of the structure, behaviour and performance variables, the general framework of research contains three types of variables (Caves, 1977; Martínez, 1988). The elements configuring the environment (regulations and requirements of governments, cultural patterns, characteristics of national markets, etc.) and those shaping the type of competition in each industry (number of competitors, market growth rate, pace of technology changes, etc.) are structure variables exerting influence on individual firms, which receive these variables as given "inputs" out of control. Based on them firms design their strategies, structures, systems and processes.

The elements of strategy and internal organisation are typical behaviour variables, since they relate to the actions which firms take based upon their objectives and policies and management values. Finally, the results of the firm's performance in the market (measured in sales growth, profitability, etc.) correspond to performance variables.

The present research is centred only on the behaviour variables — elements of strategy and internal organisation — because these are the variables on which the firm has direct influence.

5. 3. Research Issues

In Chapters 2, 3, and 4 the factors influencing the size of the corporate centre were examined, and vertical and horizontal information flows were identified. From that examination, some general propositions are derived below, with a view to advancing the hypotheses for the present research.

5. 3. 1. First proposition

The first proposition is that there is a relationship between the size of the corporate centre and the vertical information exchange between the centre, and divisions and functional departments.

This proposition relates to the way the centre influences managers lower down and affects the decisions taken by them. Two dimensions of the centre's influence were identified: planning influence and control influence. (Goold and Campbell, 1987)

Since planning influence reflects the involvement of the centre in major decisions, strong planning influence requires that there should be intense exchange of information between the centre and the rest of the organisation in the formulation and implementation of strategies (Goold and Campbell, 1987).

Control influence concerns the way in which the centre reacts to results achieved more than the way in which it helps managers lower down to shape strategies as they emerge. (Goold and Campbell, 1987). Therefore, the centre is less involved and the information exchange between the centre and the remaining part of its organisation is less intense.

Moreover, it has been argued that the size of the corporate centre is positively associated with information-processing capabilities (Haleblian and Finkelstein, 1993; James, 1951; Hill, 1982; Harrison, 1975; Cummings *et al*, 1974). Thus, the more the exchange of information, the larger the size of the corporate centre.

Accordingly, the higher the planning influence, the greater the vertical information flow, and therefore, the larger the size of the corporate

centre to cope with this need for information-processing. This relationship is set out below as Hypothesis 2.

On the other hand, the higher the control influence, the less the vertical information flow, and therefore, the less need for a large corporate centre to cope with information-processing needs. This possible inverse relationship between control influence and the size of the corporate centre is advanced below as Hypothesis 3.

In their interview survey of fourteen Japanese firms Campbell *et al* (1990) observed that in Japanese firms there is a continuous and large amount of flow of information between the divisions and the centre.

Based on this observation by Campbell *et al* and the relationship between information flow and the strategic management styles described in Chapter 3, it can be hypothesised that Japanese firms are high on planning influence (on account of the large amount of vertical information flow), and low on control influence (which seems more probable, since high control influence may reduce the flow of vertical information.) This, as a key argument in the thesis, is given the position of Hypothesis 1.

The following hypotheses are therefore advanced.

HYPOTHESIS 1: The influence the Japanese corporate centre exerts is high on planning and low on control.

HYPOTHESIS 2: The size of the corporate centre measured in terms of the number of regular full-time personnel is positively associated with the level of planning influence the corporate centre exerts.

HYPOTHESIS 3: The size of the corporate centre measured in terms of the number of regular full-time personnel is inversely associated with the level of controlling influence the corporate centre exerts.

5. 3. 2. Second proposition

The second proposition of the present research is that there is a relationship between the size of the corporate centre and horizontal information exchange in Japanese firms. It relates to the way Japanese firms are organised.

Few Japanese firms have divisional structures. Those which do so are more functional and less self-contained. Even in divisionalised firms, the divisions are "incomplete" more often than not (Japan Development Bank, 1989; Campbell *et al*, 1990) and linkages among divisions or functional departments exist (Kagono 1992). Linkages can result from sharing common clients, common production technology, etc. (Goold and Campbell, 1987).

The existence of linkages requires co-ordination. In Japanese firms co-ordination is horizontally made through information exchange among

divisions or functional departments (Aoki, 1988; Nonaka, 1990; Kagono, 1992). Thus, information exchange is decentralised, but the decentralised approach to information exchange of Japanese firms is found to be associated with a centralised approach to administrative management (Kono, 1984; Aoki, 1988).

From this proposition it may be hypothesised that:

HYPOTHESIS 4: The size of the corporate centre in Japanese firms measured in terms of the number of regular full-time personnel is positively associated with the level of linkages among divisions or functional departments.

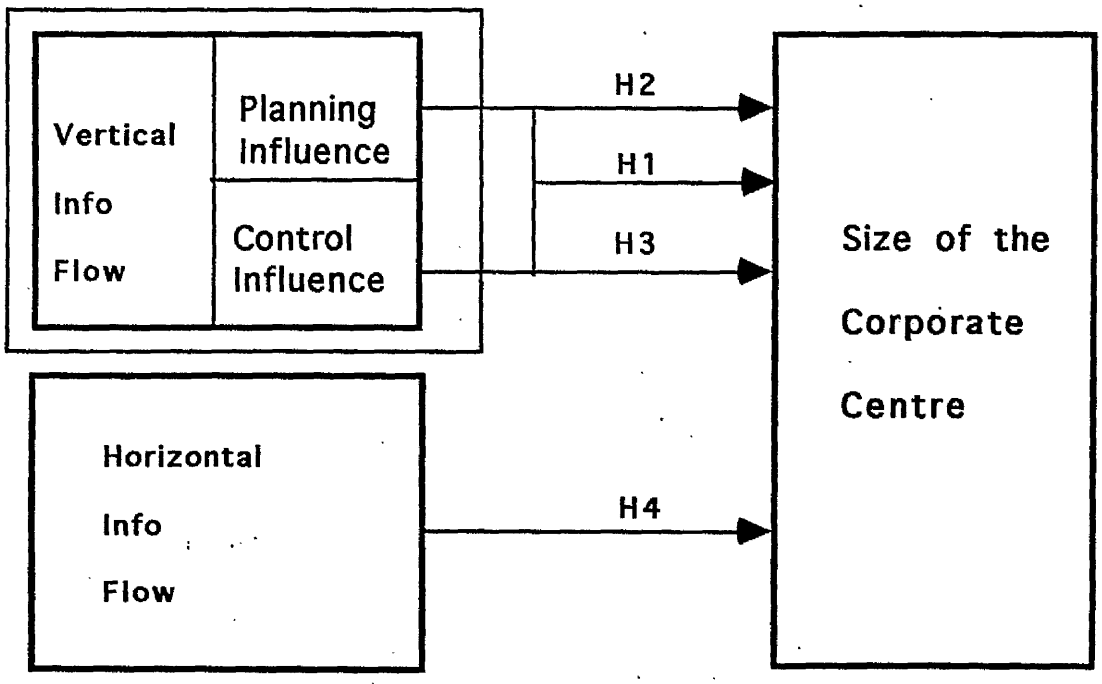
5. 4. Summary

This chapter defined the research issues of the thesis. It started by defining the scope in which the research is developed.

Thereafter, two propositions were formulated concerning the relationships, in the management of Japanese firms, between the size of the corporate centre and various variables relating to information flow, both vertical and horizontal (See Figure 5. 2.).

Based on these propositions four hypotheses were developed for testing of which the present research is carried out.

Figure 5. 2.: Relationship of the hypotheses



CHAPTER 6 : RESEARCH DESIGN

6. 1. Introduction

In the preceding chapter, the conceptual scheme and the hypotheses of the research were formulated. This chapter presents the design of the research, namely, the specification of the methods and procedures chosen to collect the evidence for the validation of these hypotheses. In the first place, an analysis is made of the type of the research which has been conducted. Second, explanation is given of the procedures for the selection of the sampling frame representing a wide range of production technology, followed by analysis of the sample. Third, the instruments used to select the data are described. Fourth, the sample or respondent firms are described. Fifth, it is explained how the variables are "operationalised" and what scales are used for the measurement. Sixth and last, the method data analysis is described to show how the results of the present study were obtained. Possible limitations of the methodology used are also mentioned.

6. 2. Type of Research

There are several criteria for the classification of empirical research. In this section, mention will only be made of two of the commonest: 1) the source from which data are gathered, and 2) the main purpose of the research.

On the basis of the source from which data are gathered, researches can be classified into five types: 1) those using secondary data, 2) those gathering primary or first-hand data by means of communication with respondents, 3) natural experiments, 4) controlled experiments, and 5) simulation. The present research corresponds to the second type of research, namely, to research based on a questionnaire survey which contains primary data gathered specifically for this purpose. The following sections will describe the survey including the population, the sampling frame and the sample.

According to a second classification of the research purpose, there are three types of research: exploratory, descriptive, and causal. Although the present research has certain elements of a descriptive study, its main purpose is to demonstrate relationships of "causal type" between the size of the corporate centre and the role it played, as described in the preceding chapter. In Chapter 5, it was hypothesised that Japanese firms have relatively large corporate centres, independent of production technology, industry environment, and organisational structure (whether functional or "incomplete" divisional structure), and that this relatively large corporate centre is necessary for good sharing of information in the organisation. It is, then, obvious that this research aspires not only to demonstrate the existence of a relationship between the size and the role played by the corporate centre, but also to explain the "probabilistic cause" of this relationship, which is one

type of causal study[1]. A probabilistic cause is necessary but not sufficient for the subsequent occurrence of an event[2].

The research is of the "causal type" , but it does not explain complete causal relationships, since, on account of the nature of its design, it is not possible to demonstrate the total causal relationship. Green and Tull (1975: 74) argue that there are three conditions or three types of evidence for drawing inferences about complete causal relationships: (1) associative variation, which is a measure of the extent to which occurrences of two variables are associated; (2) sequence of events, namely, the requirement that the causal factor occurs first; and (3) absence of other possible causal factors. The questionnaire survey method adopted in this research allows us to meet only the first of the three conditions, namely, the existence of certain relationship, in addition to a coherent argument which may explain and support the existence of such a relationship. It is impossible to comply with the remaining two conditions through a questionnaire survey. The remaining two conditions could only be complied with through an experimental design with a control group, in other words, a controlled

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[1] Another type of causal study is about deterministic causation. A deterministic cause is an event that is necessary and sufficient for the subsequent occurrence of another event.

[2] A probabilistic causation can be typically seen in a multivariate relationship of the form:

$Y = F(X_1, X_2)$

where X_1 and X_2 are independent. Assuming that it is possible to specify F, the variables X_1 and X_2 become jointly necessary and sufficient to determine Y. The effect on Y of a known change in X_1 may be reinforced, counteracted, or left the same, depending upon what happens to X_2. X_1 is not sufficient to determine Y.

experiment, which, obviously, does not fit in with the characteristics of this research.

This research limits itself to a focus on the "functionalist" relationships between information flows and the size of the corporate centre. It does not exclude, nevertheless, the possibility of alternative influences on the size of the corporate centre, such as political process and dysfunctional effect of bureaucracy as well as other institutional influences on it. Further research based on the "non-functionalist" approach is suggested in Chapter 8, while the empirical findings of this research are substantiated with some case study material.

In summary, the chosen research design may not demonstrate the complete causal relationship, but the research will provide evidence of causal explanation of the "probabilistic" type, which means that the explanation will give an account of a cause that is necessary but not sufficient for the subsequent occurrence of the event.

6. 3. Population and Sampling Frame

6. 3. 1. Population

The unit of analysis, therefore the population of the present research, is Japanese firms. Such a population is, however, so vast that selection is needed on the basis of three criteria:

1. the firms in the population should represent industries in different environments and with different production technologies.

2. the firms selected should be relatively homogeneous. This includes that they have a certain size in either their turnover or number of employees.

3. the population should be sufficiently large to extract from it a sample of reasonable size.

Using all Japanese firms as the population would mean including firms of very different sizes and from the primary, the secondary, and the tertiary sectors. This would comply with the first criterion but would be against the second because of their heterogeneity. For example, the production process and activity is very different in an agribusiness, in an automobile, and in an insurance firm.

Accordingly, it was decided to consider as the population the firms listed on the First and Second Sections of the Tokyo, Osaka and Nagoya Stock Exchanges, operating in manufacturing industries in Japan.

To build up the population of the present research "JAPAN COMPANY HANDBOOK — FIRST SECTION Summer 1993", "JAPAN COMPANY HANDBOOK — SECOND SECTION Summer 1993", both of which are published by Toyo Keizai, and "Nikkei Kaisha Joho — 93-IV" published

by Nippon Keizai Shimbun, were used. The first two provide the latest financial information on all Japanese firms listed in the First and Second Sections of the Tokyo, Osaka and Nagoya Stock Exchanges and cover a total of 2,060 firms as of March 30, 1993. The third provides the financial information on 2,138 firms listed in the First and Second Section as of September 1st, 1993.

Based upon these publications and SICC codes applied to each company, it is possible to identify the companies in the manufacturing industry. Based on this identification it is found that the number of firms complying with the sampling criteria — namely, the population of this research — is around 1300.

6. 3. 2. Sampling Frame

Industries are classified according to the securities code number which is a four-digit number assigned by the Securities Identification Code Conference (SICC). The industries chosen for the present research have code numbers from 2001 to 7999, which correspond to manufacturing industries.

Non-probability sampling procedures were used for the sampling procedures. The procedures included two principal varieties: convenience sampling and judgmental sampling. Two criteria were used to select the sample from the sampling frame.

(a) A criterion was used to attempt to make the sample representative of the population of the firms in the selected industries, and of the reality of the business community in Japan. These conditions would be fulfilled if it was ensured that principal firms in each industry were included in the sampling frame. This criterion could correspond to sampling on a judgmental basis. Firms with over 51 per cent foreign ownership were excluded, with the aim of limiting the samples to firms of Japanese ownership and, therefore, of "Japanese management".

To meet the first criterion, the full-time employee number of over 1,500 was used as the criterion for selection.

(b) The second criterion is the accessibility to the firms. Contacts of the researcher or the Manchester Business School were used. Approximately fifteen firms in the sampling frame were approached in this way. The rest were contacted by means of a letter addressed to the office of the president or managing director. This criterion corresponds to convenience sampling.

Table 6.1. presents the final sample of firms classified according to industries. In total, 375 firms were included, and they were divided to eight industry categories, with a maximum of 111 firms in the Chemicals and Petroleum Products industry category, and a minimum of ten in Shipbuilding and Rolling-stock.

375 firms listed in the First Sections of the Tokyo, Osaka and Nagoya Stock Exchanges, operating in manufacturing fields in Japan, belonging

to eight industries of Table 6.1., constituted what could be called the SAMPLING FRAME (Bailey, 1982). From this sampling frame the 55 firms which answered the questionnaire were used for the analysis of the research.

Table 6. 1.: Sampling frame

SICC code	Industry	N° of Firms	Per cent (%)
2001-2899	Foods & Beverages	28	7
3001-5393	Chemicals & Petroleum Products	111	30
5401-5992	Metal Products	43	11
6005-6652	Machinery & Parts	48	13
6701-6999	Communications & Electronics	48	13
7003-7142	Shipbuilding & Rollingstock	10	3
7201-7309	Motor Vehicles	36	10
7407-7999	Miscellaneous Manufacturing	51	14
	TOTAL	375	100%

Source: Japan Company Handbook — First Section 1993 Summer (1993)

Table 6. 2. summarises some economic and financial information in terms of total assets, turnover and full-time employees in 1993 on the firms included in the sampling frame. Total assets include all assets possessed by the firm and represent the total of current assets, fixed assets, and deferred assets.

Table 6. 2.: Information on the firms in the sampling frame

	Maximum	Average	Std Dev	Minimum
Total Assets (a)	9,582,707	554,540	1,119,449	30,453
Turnover (a)	10,163,376	503,113	1,021,684	19,667
Employees (b)	83,821	6,606	10,320	1,505

Notes (a) in ¥ millions.

(b) in number of people.

Source: Japan Company Handbook — First Section 1993 Summer (1993)

6. 4. Data Gathering Procedure

It was explained in the preceding section that one of the criteria for the selection of the sample was accessibility to the firms. A list was prepared for inclusion of the contacts that the author of the dissertation has through his past business experience. Then, other contacts available from the Manchester Business School were added. The accessibility criterion was balanced by other criteria for the selection of the sample, as described in the preceding section.

The contacts on the list were approached in personal interviews, by telephone, or by letter to explain the purpose of the study, as well as to request their help. In exchange, a copy of the survey result both for the entire sample and for their industry category was offered. About 15 firms were contacted in this way. All telephone calls were made by the author of this dissertation. The majority of the executives interviewed or contacted by phone immediately accepted the request, though a few of them asked for an official letter to file the request.

The firms in the sampling frame were contacted by a letter dated 23rd November, 1993 addressed to the Public Relations department. A copy is attached as Annexes 1a (English Original) and 1b (Japanese translation). The addresses were found in "JAPAN COMPANY HANDBOOK — FIRST SECTION Summer 1993" published by Toyo Keizai. One and a half month after the despatch of the first letter, a reminder was sent to confirm receipt of the letter and/or to remind the firms of the request.

Out of the total 375 firms contacted, seventeen apologised for not being able to collaborate with the research, 283 never responded.

Fifty-eight firms sent back the questionnaire before the despatch of the reminder. Fifteen responses out of these fifty-eight did not contain the data on the size of the corporate centre.

After the reminder fourteen firms sent in their responses, but five of these lacked the data on the size of the corporate centre.

Twenty-four telephone calls were personally made by the researcher of the present survey to the people who had filled in the questionnaire in order to get the data on the size of the corporate centre. As a consequence, three firms sent back a fax with the requested data.

As shown in Table 6. 3., fifty-five firms form part of the sample (to be referred to hereafter as Respondent Firms).

Table 6. 3.: Respondent firms

Sampling frame	375
Before the reminder	
Respondent firms	58
Lacking the size data	(15)
Usable responses	43
After the reminder	
Respondent firms	14
Lacking the size data	(5)
Firms responded with the data on the size	3
Usable responses	12
Total usable responses	55

The motives given by the firms for declining to participate in the research were diverse. They were as follows:

— "The data requested are confidential information and our firm's policy is not to provide it"

— "Information on the corporate structure is regarded as confidential at our firm"

— "Some of the requested information is connected with confidential matters at our firm"

— "After discussing the issue among us, we decided that our firm's organisation does not merit your study"

— "We are sorry for not being able to respond your request, but we have to decline it"

— "Basically, our firm does not publish the information related to the overall corporate structure"

The collaboration of each firm in the research consisted in the filling-in of a questionnaire. The questionnaire is described in the following section and a copy is included as Annex 2a (English Original) and Annex 2b (Japanese translation).

As the questionnaire contained questions on strategic aspects of the firm, it was very important that the respondents should be in a position to have sufficient data or information, or to be able to obtain it from relevant departments or divisions. Table 6. 4. presents a summary of their posts and departments of the respondents to the questionnaire. It is observed that all respondents are either from departments which hold overall information about their firms (General Affairs, Public Relations and Personnel Department) or from departments directly related to strategic issues (President's Office and Corporate Planning), which guarantees that their responses reflect the reality of their firms. Exceptions are four respondents who did not mention their positions in their firms.

Table 6. 4.: Departments and posts of respondents (All responses)

Department	Position	Frequency	Percent
Corporate Planning			
	General Manager	4	
	Section Manager	3	
	Deputy Manager		
	Staff	2	
	Subtotal	9	16%
General Affairs			
	General Manager	1	
	Section Manager	3	
	Deputy Manager	1	
	Staff	3	
	Subtotal	8	15%
Personnel			
	General Manager		
	Section Manager	1	
	Deputy Manager		
	Staff		
	Subtotal	1	2%
President's Office			
	General Manager		
	Section Manager	2	
	Deputy Manager		
	Staff		
	Subtotal	2	4%
Public Relations			
	General Manager	5	
	Section Manager	17	
	Deputy Manager	3	
	Staff	6	
	Subtotal	31	56%
Unknown		4	
	Subtotal	4	7%
	TOTAL	55	100%

When the questionnaires were received — which covered the period between mid-October, 1993 and end-January, 1994 — a short thank-you letter was sent to each respondent, to inform them that the data-gathering phase had ended successfully and to remind them that a summary of the survey results would be sent to them in June or July.

6. 5. Respondent Firms (Sample)

In this section four explanations will be given of the fifty-five firms whose responses were used for the empirical analysis, the results of which will be described in depth in Chapter 7. First, a list of these firms is provided within the constraint of a strictly confidential handling of their responses.

Second, these respondent firms were classified by themselves according to their own assessment of the industry categories mentioned in the questionnaire, which follow those of JAPAN COMPANY HANDBOOK. All manufacturing industry categories of JAPAN COMPANY HANDBOOK are represented in the responses.

Third, the respondent firms are classified according to their production technology in terms of the rountineness/non routineness criterion. As Woodward (1965) defined it, the most routine technology corresponds to continuous process, whereas the most non-routine, to custom technology.

Production technology is an important contingency factor, since it is essential in determining organisational structure and in setting the tone of human relationships inside the firms (Woodward, 1958).Likewise, it has become a significant vehicle for changes in employment and organisation (Child 1984).

The even representation and wide spread of production technology in the sampling frame shows that the respondent cases are unbiased in terms of the technology used. However, due to the small number of sample firms in each industry category, a valid comparison on the basis of industry category and production technology was not possible in our analysis.

Fourth, information is provided on the comparison of industry category and production technology.

The respondent firms

As all the responses and their data are to be treated strictly confidential, it is not possible to give any information or clue which might lead to the identification of each reply with a specific firm. Only the names of the respondent firms are disclosed below:

Table 6. 5.: Respondent firms

FIRM	TOTAL ASSETS	TURNOVER	EMPLOYEES
AIWA	113,314	161,650	1,703
Ajinomoto	582,657	595,000	6,074
AMADA	320,294	146,756	1,847
Asahi Glass	1,515,626	1,011,815	9,808
ASICS	118,596	115,424	1,998
BRIDGESTONE	1,846,290	725,441	16,391
Cleanup	69,457	88,259	2,679
DAIHEN	101,755	74,000	1,839
DAIKIN INDUSTRIES	438,963	342,000	8,579
DAINIPPON SCREEN MFG	240,607	119,625	3,232
EZAKI GLICO	183,562	93,500	1,818
Fuji Heavy Industries	825,130	873,042	14,813
Fujikura	439,452	251,700	4,460
HONDA MOTOR	3,156,181	2,694,836	31,089
Ishikawajima Harima Heavy Inds	1,421,839	803,389	16,273
Japan Aircraft Mfg	53,264	33,218	1,710
KAKEN PHARMACEUTICAL CO	73,165	68,495	1,857
Kawasaki Heavy Industries	1,162,201	953,000	17,495
KOKUYO	265,942	303,737	3,335
KOMATSU	1,452,818	525,704	9,238
Komatsu Forklift	101,709	70,364	1,524
KURABO INDUSTRIES	173,179	130,543	3,403
Kureha Chemical Industry	142,208	93,376	2,067
KYOCERA	666,897	300,550	13,914
KYOWA HAKKO KOGYO	388,239	296,000	5,500
Meiji Milk Products	226,483	424,297	6,053
Mitsubishi Steel Mfg	99,309	78,760	2,211
MIURA	52,130	38,921	1,572
Morinaga & Co	192,166	155,636	2,776
NIKON	366,618	204,897	7,351
NIPPON PAINT	277,525	161,163	2,905
Nippon Steel Chemical	389,214	281,509	2,937
Nippon Yakin Kogyo	147,899	87,000	1,778
Nissin Electric	109,460	107,728	3,609
NTN	471,904	272,000	7,738
OMRON	609,855	3,640,000	7,900
SANKYO ALUMINIUM INDUSTRY	356,744	298,024	6,435
Sasebo Heavy Industries	72,409	56,400	2,100
SEGA ENTERPRISES	241,645	346,900	3,500
Sharp	214,690	1,152,800	28,300
Shionogi	367,619	238,839	7,037
SS PHARMACEUTICAL	64,916	55,600	2,117
Sumitomo Metal Industries	2,673,470	1,108,557	22,089
Sumitomo Metal Mining	670,519	444,229	4,193
TAISHO PHARMACEUTICAL	319,530	204,035	4,551
Taiyo Yuden	111,414	65,326	2,614
TANABE SEIYAKU	265,106	211,658	4,989
TDK	627,341	367,340	8,739
TOA STEEL CO., LTD.	210,830	186,499	1,834
TOPPAN PRINTING	1,096,173	842,600	14,404
TOSHIBA	5,724,439	3,150,571	74,883
Toyama Chemical	87,478	46,056	2,311
TSUMURA & CO	216,013	109,941	3,486
YAMATAKE-HONEYWELL	171,543	122,500	4,500

Note: In millions of Japanese yen.

Classification by total assets, turnover and full-time employees

Table 6. 6. summarises the information on the respondent firms in terms of total assets, turnover and full-time employees in 1993.

Table 6. 6.: Information on the respondent firms

	Maximum	Average	Std Dev	Minimum
Total Assets (a)	5,724,439	592,787	943,235	52,130
Turnover (a)	3,640,000	465,147	722,157	33,218
Employees (b)	74,883	7,893	11,314	1,524

Notes (a) In ¥ millions

(b) Number of people

Source: Japan Company Handbook — First Section 1993 Summer (1993) and the data received from the respondent firms.

Industry classification

Respondent firms are distributed among eight industries, which cover all the manufacturing industry categories defined in JAPAN COMPANY HANDBOOK. The number of firms by industry ranges from fifteen for miscellaneous manufacturing to two for shipbuilding and rolling stock industry (See Table 6. 7).

Table 6. 7.: Respondent firms by industry

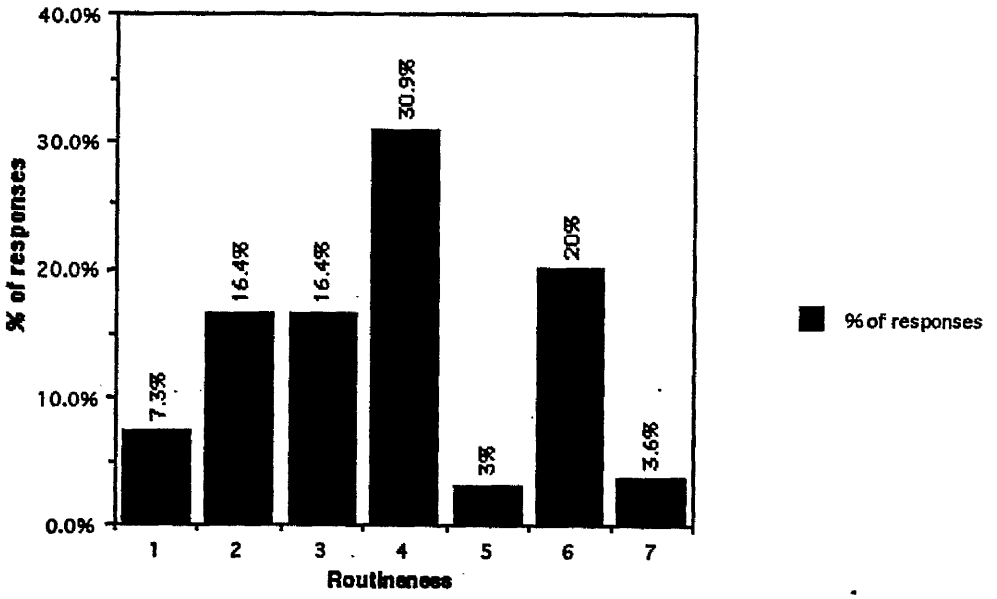
Industry category	Number of Firms	Per cent (%)
Foods & Beverages	5	9
Chemical & Petroleum Products	7	13
Metal Products	7	13
Machinery & Parts	8	15
Communications & Electronics	6	11
Shipbuilding & Rollingstock	2	4
Motor Vehicles	5	9
Miscellaneous Manufacturing	15	27
TOTAL	55	100%

Source: Japan Company Handbook — First Section 1993 Summer (1993) and the information received from the respondent firms.

Classification by production technology

Production technology will be analysed in Chapter 7 as one of three environmental factors, along with the stability of business environment and diversification. As shown in Table 7. 4 in the next chapter, the production technology of the respondent firms ranges from 1 (=extremely high routineness) to 7 (=extremely low routineness). Scores 4, 6 and 2 and 3 have large values with 30.9, 20, and 16.4 and 16.4 per cent, respectively. Figure 6.1 illustrates the data from the responses. It is observed from the figure that the production technology in terms of rountineness and non-routineness is normally distributed, except for score 5.

Figure 6. 1.: Production technology



Comparison of industry classification and production technology

In terms of industry classification, it was found that Miscellaneous industry has the most non-routine production technology with 5.55, and Communications and Electronics, the highest routine production technology with 2.83. The details of the routineness of production technology is as shown in Table 6. 8.

Table 6. 8.: Routineness of production technology

Industry category	Average routineness	Standard deviation	Number of firms
Foods & beverages	3.00	1.41	5
Chemical & petroleum products	2.86	1.68	7
Metal products	3.29	1.25	7
Machinery & parts	4.14	1.77	8
Communications & electronics	2.83	1.60	6
Shipbuilding & rolling stock	4.00	1.22	2
Motor vehicles	5.25	1.50	5
Miscellaneous manufacturing	4.57	1.74	15
Total	3.76	1.71	55

6. 6. Representativeness of the respondent firms

Since the number of the respondent firms are 14 per cent of the sampling frame, a test of the representativeness of these firms was carried out.

Table 6. 9. presents the results of the two-sample t-test to evaluate the representativeness of the respondent firms within the sampling frame.

Table 6. 9.: t-test for the sampling frame and the respondent firms

(In ¥ millions: 1993)

Total Assets

	Number of Cases	Mean	Std Dev	Std Error
Sampling Frame	375	554,540	1,119,449	57,808
Respondent Firms	55	592,787	943,235	127,185

	F Value	1.41
	2-tail Probability	0.124
Pooled Variance Estimate	t value	-0.24
	Degrees of Freedom	428
	2-tail Probability	0.81
Separate Variance Estimate	t Value	-0.27
	Degrees of Freedom	78.13
	2-tail Probability	0.785

Turnover

	Number of Cases	Mean	Std Dev	Std Error
Sampling Frame	375	503,113	1,021,684	52,759
Respondent Firms	55	465,147	722,157	97,375

	F Value	2
	2-tail Probability	0.002
Pooled Variance Estimate	t value	0.27
	Degrees of Freedom	428
	2-tail Probability	0.79
Separate Variance Estimate	t Value	0.34
	Degrees of Freedom	89.25
	2-tail Probability	0.733

Employees

	Number of Cases	Mean	Std Dev	Std Error
Sampling Frame	375	6,606	10,320	532
Respondent Firms	55	7,893	11,314	1,525

	F Value	1.2
	2-tail Probability	0.336
Pooled Variance Estimate	t value	1.85
	Degrees of Freedom	428
	2-tail Probability	0.394
Separate Variance Estimate	t Value	1.8
	Degrees of Freedom	67.84
	2-tail Probability	0.429

As t = -0.24, df = 428, and p = 0.810 for Total Assets, there is no significant difference between the means of the Sampling Frame and the Respondent Firms. Similarly, for Turnover and Employees, t = 0.27, df = 428, and p = 0.790; and t = -0.85, df = 428, and p = 0.394, respectively. There is no significant difference between the Sampling Firms and the Respondent Firms in terms of turnover and employees, either. Thus it may be concluded that both the Sampling Firms and the Respondent Firms come from the same population.

6. 7. Instrument for Data Gathering

The data were gathered by means of a structured questionnaire based mainly upon closed-ended questions. Some of the data were gathered by open-ended questions, which could be easily and briefly answered. The questionnaire was composed of five parts, which are briefly described below. (See Questionnaire in Annex 2a):

1) General Information: the purpose of this section was to obtain general information on:

- activity of the firm
- name of the firm
- respondent's name/position
- turnover
- number of employees
- number of corporate staff

- expenditure on corporate functions

2) Environmental Factors: information on the environment of the respondent firm and on its production technologies was gathered in this section.

3) Organisational Structure and Systems: information was collected on the divisional form or functional form, the number of divisions, and the functions performed by divisions.

4) Corporate Centre's role: planning influence and control influence exerted by the corporate centre were measured in this section.

5) Linkages: information on the sharing of customers, reciprocal purchase of products, sharing of any production technology, sharing of marketing skill and product development was gathered in this section.

6) Scope and Manning of the Corporate Centre: information on the number of the corporate personnel and of central functions was gathered in this section.

As can be observed, the questionnaire goes from general questions to more specific ones, which are the real objective of the research. This method of "narrowing down" helps respondents to view specific questions from a wide angle, which enables them to understand better the "meaning" of these questions.

The majority of the authors on the design of research hold that a good questionnaire is one that has been submitted to in-depth scrutiny, and that there is no substitute for this stage (for example, de Vaus, 1990). With this view in mind, the questionnaire of the present research was reviewed by the doctoral supervisor of the author and by a doctoral student at Manchester Business School. It was then translated into Japanese by the author of this dissertation. Once translated into Japanese the questionnaire was reviewed by a Japanese Certified Public Accountant (CPA) in comparison with the original in English. The questionnaire in Japanese was then test-answered by three Japanese second-year MBA students at Manchester Business School, all of whom are trainees from Japanese firms. At the same time, it was test-answered by three expatriate managers at three Japanese multinational enterprises, one in UK (a leading electric and electronic goods manufacturer) and two in Spain (a motor vehicles manufacturer and a pharmaceutical firm). This test stage conducted in October, 1993 turned out to be useful, since, although the questionnaire was in general well understood, the test allowed the introduction of some interesting modifications (*e.g.*, an explanation on the corporate centre).

6. 8. Scales for the Measurement of Variables

The research issues described in Chapter 5 were "operationalised" in twenty-two variables measured by means of twenty-two interval-scaled questions. Four questions were measured by nominal scales, ordinal scales and ratio scales.

Given the nature of the elements of strategic management which are not amenable to quantification, it was necessary to "operationalise" these variables by means of perception measurements. All the questions involving perceptions and opinions of the respondents were measured by ordinal scales, which are, however, considered by several authors to be a good approximation to interval scaling (Lehman, 1979; Aaker and Day, 1983). In a research like this, it is desirable that the scales used should be interval scales or at least a good approximation to them, since, with these scales, it makes sense to talk about average and standard deviation, and multivariate statistic techniques can be applied.

The scales used, which are no more than a variation of the scales of the semantic differential (SD) method developed by Osgood, Suci, and Tannenbaum (1957), are known as bipolar scales, because they assign a set of pairs of antonyms, the extreme of each pair being separated by odd-number intervals, perceived by respondents to be equidistant intervals. An example of the scale is as follows:

> To what extent does the corporate centre provide a strategy and direction as guidance for the divisions? Please circle the number which best represents the situation at your firm.

a very great deal of strategy and direction			midpoint			little or no strategy and direction
1	2	3	4	5	6	7

It can reasonably be supposed that the respondent considered the alternative 2 to be as distant from 1 as the alternative 6 from 7.

(This example refers to planning influence. It relates the way the corporate centre influences managers lower down and affects the decisions taken by them, and concerns the centre's effort to shape strategies as they emerge and before decisions are taken. In this research, it is measured by the average of aggregated values in interval scale questions answered by the sample firms.)

Twenty questions about the corporate centre's role[3], business environment and linkages are based on this scale to measure

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[3] For Part 4 Corporate Centre' s Role of the questionnaire, Ashridge Strategic Management's questionnaire entitled "Strategic Management Style: Understanding your company's style" was taken into account.

Ashridge's questionnaire is based on fixed-alternative questions. An example of these questions reads:

> How far does the headquarters provide a strategy and direction as guidance for the divisions? Tick one of the following:
>
> (a) Clear headquarters strategy articulated. Division expected to follow the centre's lead.
> (b) Some themes, objectives and policies from headquarters, but strategy mainly bottom-up.

responses. The "operationalisation" of these questions can be seen in the questionnaire used for gathering the data of this research (Annex 2a and 2b). Table 6. 10 summarises how the key variables of this research are operationalised.

Table 6. 10.: Measurement and operationalisation of the key variables

Variables	Operationalised definition	Question numbering in Annex 2a
Planning influence		
	Involvement of the corporate centre in the decisions and strategies of lower management	4 (1)
	Provision of strategy and direction	4 (2)
	Importance of formal strategic planning system	4 (3)
	Centre's investment initiatives	4 (4)
	Strategy criteria in the approval of capital requests	4 (5)
	Importance of non-financial objectives set for lower management	4 (7)
Control influence		
	Importance of financial return for large capital requests	4 (6)
	Financial targets versus strategic objectives in performance review	4 (8)
	Agreement on financial targets	4 (9)
	Financial targets as a promise	4 (10)
	Monitoring of financial performance	4 (11)
	Division's performance and manager's career	4 (12)
Linkages		
	Common customers	5 (1)
	Purchase of products among divisions	5 (2)
	Common production technology	5 (3)
	Shared marketing skills	5 (4)
	Shared product development	5 (5)
The centre's size		
	Number of staff	6

Like all other interval-scaled questions in the questionnaire, there are two extremes of the scale, which assumes two points:

(c) Headquarters detached; all initiatives, except for major acquisitions, come from below.

1. That the respondent correctly interpreted the term "strategy" and "direction"; and

2. That the adjectives "a very great deal of strategy and direction" and "no strategy and direction at all" bear the same meaning to each respondent.

Therefore, it is possible to compare the involvement level of the corporate centre in strategy and direction setting among different firms in the respondent sample.

Some of the remaining questions on the corporate centre's role used interval-scales (which are, moreover, interval-ratio scales), insofar as they refer to objective quantifiable data and facts. An example of this scale is as follows:

> Are major investment ideas that affect the division initiated at corporate centre level? Please circle the number which best represents the situation at your firm.

100% of cases	over 75% but less than 100% of cases	over 50% but less than 75% of cases	over 25% but less than 50% of cases	over 0% but less than 25% of cases
1	2	3	4	5

Regarding the number of response categories or response alternatives, Cox (1980) argues that the optimum number of categories is between 4

and 9, and that an odd number is preferable, since it enables respondents to adopt a neutral position. Accordingly, the measurement scales of the questionnaire of the present research followed this argument, and gave seven categories.

6. 9. Data Analysis

The data gathered by means of the questionnaire were statistically analysed using various multivariate techniques, especially multiple regression analysis, at two stages. The reason why multiple regression was mainly used and the explanation of the two stages for the data analysis are set out below. Further details of the data analysis will be described in the next chapter.

First, the reason why multiple regression was mainly used in the data analysis. Methods for the analysis of associative data may be classified into two sets: dependence structure and interdependence structures.

If the data matrix is partitioned into criterion (dependent) and predictor (independent) variables, the problem becomes one of analysing *dependence structures*. This, in turn, can be broken down into two sub-categories — 1) single criterion/multiple predictor association and 2) multiple criterion/multiple predictor association. Multiple regression, analysis of variance and covariance (ANOVA and ANCOVA), and two-group discriminant analysis are used for single criterion/multiple predictor analysis, whereas multiple discriminant analysis, canonical correlation and multivariate analysis of variance and covariance

(MANOVA and MANCOVA) are used for multiple criterion/multiple predictor variables.

If the data matrix is not partitioned into criterion and predictor subsets, the problem is one of analysing *interdependence* structures. Depending on whether the emphasis is on variables or objects, factor analysis and cluster analysis are used for interdependence structures.

The present research deals with the analysis of dependence structures in which the single criterion or dependent variable is the size of the corporate centre and predictor variables are multiple. Multiple regression was used as one of the main data analysis tools, since other analytical instruments including ANOVA, ANCOVA and discriminant analyses are either more suitable for providing the tools to judge the reliability of any observed effects (*i.e.*, whether an observed difference is due to a treatment effect or to random sampling variability) or for research problems in which the criterion variable is categorical, and the predictor variables, metric.

The explanation of the two stages of the data analysis is set out below.

At the first stage, descriptive analysis was made of the responses. This included the size of the corporate centre, business environment, and organisational structure.

Various descriptive statistics were calculated, including mean, standard deviation, minimum and maximum scores of the variables.

The second stage of the analysis of the data consisted in testing the hypotheses formulated in Chapter 5. For Hypothesis 1, the paired t-test for planning and control variables was conducted with the aim of finding out whether the scores of planning influence variables were significantly different from those of control influence variables. Regression analysis was carried out to determine the relationship between planning and control influences.

Concerning Hypotheses 2 and 3, the scattergrams for the size of the corporate centre, and for planning and control influences were plotted, which was followed by the multiple regression for the size of the corporate centre and planning and control influences. Pearson's product moment coefficients were computed for the size of the corporate centre, planning and control influences.

For Hypothesis 4, multiple regression was made for all respondent firms. Dummy variables were used to test the effect of the employee size on the relationship between the size of the corporate centre and linkages. Multiple regression was further made for the firms with over 5,000 employees.

6. 10. Limitations of the Methodology Used

In any research, the design chosen presents its advantages and limitations, and the present one is no exception. The advantages have

already been referred to in the preceding section. It is necessary, then, to call attention to the limitations.

One limitation relates to the sampling procedure adopted. A non-probability sampling procedure makes it impossible to estimate the probability that a given firm of the sampling frame be included in the sample. This means that the size of the "sampling error" is unknown, and there is no objective method to evaluate it. However, it does not mean that the sample is less representative than if a probability procedure had been adopted.

A second limitation is that the measurement of many variables is based upon respondent perceptions. Despite the precautions taken to ensure the reliability of the SD-based interval scales, it cannot be guaranteed that the respondents' opinions were the same at two different points of time — even if they are not far away from each other. Nonetheless, as mentioned in the preceding section, it was necessary to use perception measurement, due to the nature of several elements of strategic management which are not amenable to being quantified.

An alternative method to measure each "construct" would have been not to use a single perception variable, but to use a series of objective but indirect variables, which might measure, when taken all together, each "construct". Examples of this measurement are Pugh *et al.* (1968) and Child (1972) who measured the formalisation and centralisation of the organisation as a whole by means of a large number of non-perception, indirect variables.

Despite the fact that this method may ensure the achievement of high-level objectivity, the method presents at least three types of inconvenience. First, it takes for granted that selected indirect variables are good estimators of the direct variable. Second, to take all the indirect variables as a whole implies integrating them into a sole and general measurement. As the weight or relative importance of each indirect variable in the general index is not known, the weights are deemed to be equal, which may be a crass error. Therefore, the average obtained from these objective measurements can be even more biased than the simple perception of a respondent. Third, this indirect method can be too laborious when many "constructs" are to be measured at the same time (which is the case with the present research). The use of indirect variables for each of twenty-one perceptual variables contained in this research would have required an extensive questionnaire exacting great efforts from respondents, which would have made the questionnaire survey impracticable.

6. 11. Summary

In this chapter, all methodological aspects of the present research have been reviewed. In the first place, it was mentioned that the present research consists of a questionnaire survey with a large number of firms, for the purpose of obtaining empirical evidence to test the relationships of causal type between the size of the corporate centre and various variables, expressed as hypotheses in the preceding chapter.

It was also mentioned that the sampling frame of this research is composed of 375 Japanese firms listed on the First Sections of the Tokyo, Osaka and Nagoya Stock Exchanges, operating in manufacturing field in Japan, and with over 1,500 regular full-time employees. The sampling frame represents a wide range of production technology. The instrument used to gather data was a structured questionnaire. Fifty-five firms returned the completed questionnaire.

The research variables were "operationalised" by means of perceptual and non-perceptual type questions, for the measurement of which semi-interval and interval scales were respectively employed. For the analysis of the data, three stages were followed using several multivariate techniques.

Finally, two limitations of the methodology used were discussed. One of these relates to the non-probability procedures employed to select the sample, and the other to the use of perceptual measurements to "operationalise" some variables of the conceptual scheme.

CHAPTER 7: PRESENTATION AND ANALYSIS OF THE DATA

7. 1. Introduction

The preceding chapter described the methods used for the gathering of the data to test the hypotheses of this research. This chapter presents, analyses and comments on the results obtained from the statistical treatment[1] of the data thus gathered. Case studies of Japanese firms are described to illustrate the results. Empirical studies in Western firms are provided to show them "in the round".

As briefly mentioned in Section 6. 8 in Chapter 6, the data were analysed at two stages — namely, descriptive analysis and hypothesis testing.

Section 7. 2 deals with the first stage of the analysis. First, a descriptive analysis of the responses was conducted. This included the size of the corporate centre, the business environment (stability of business environment, diversification, and production technologies) and the organisational structure (divisional form and functions performed by divisions and by the corporate centre).

The descriptive analysis at the first stage also included the two-sample t-test in order to examine if there was a statistically significant difference between the respondent firms and the sampling frame. Various descriptive statistics were also calculated, including frequency, mean, standard deviation, minimum and

[1] All the statistical data processing was conducted by the use of the SPSS statistical package (Release 4).

maximum scores of the variables. Correlation and multiple regression analyses were also conducted to see if there was significant relationship between the centre's size and environmental variables.

Section 7. 3 describes the second stage of the data analysis. It consisted in testing the hypotheses formulated in Chapter 4.

To test Hypothesis 1 about planning and control influences, the paired t-test for planning and control variables of each respondent firm was conducted in order to find out if the scores of planning influence were significantly different from those of control influence. A scattergram was plotted to visualise the distribution of planning and control variables. Regression analysis was carried out to determine the relationship existing between planning and control influences.

For Hypotheses 2 and 3, which posit the relationship between the size of the corporate centre and planning and control influences, the scattergrams for the size of the corporate centre and planning and control influences were plotted. Then, a multiple regression analysis was conducted, separately, for planning and control influences, with the aim of finding out association among variables related to planning influence, control influence, and the size of the corporate centre. Pearson's product moment correlation coefficients were calculated for the size of the corporate centre, planning and control influences.

Lastly, for Hypothesis 4 concerning the size of the corporate centre and linkages, a multiple regression analysis was made for all respondent firms. Dummy variables were then used to test the effect of the employee number on the relationship between the size of the corporate centre and linkages. As a consequence, the respondent firms with over 5,000 employees were tested with the multiple regression analysis.

Section 7. 4 summarises and evaluates the results. Findings are mentioned concerning the hypotheses formulated. Findings not mentioned by way of hypotheses but relating to the size of the corporate centre are also summarised.

Section 7. 5 adds data from case study materials in the sample which illustrate and give more meaning to the results obtained from the statistical analysis.

Section 7. 6 compares the results with those from other empirical studies on Western firms.

Section 7. 7 summarises the chapter.

7. 2. Descriptive Analysis of the Respondent Firms

Before proceeding to the hypothesis testing, it would be useful to have a general view of the respondent firms, through descriptive analysis, in such aspects as the size of the corporate centre, environmental elements, production technologies, and organisational structure. Such a general view may lead us to a better interpretation and understanding of Japanese strategic management in transformation today.

Five steps have been taken with the aim of preparing a general view of respondent firms.

First, the size of the corporate centre is analysed. Analysis of environmental elements comprising business environment stability, diversification, and production technologies follows. Third, the organisational structure of the respondent firms is examined. Fourth, the functions performed by divisions and the corporate centre are analysed. The size of the corporate centre is regressed in relation to environmental elements, organisational structure, and corporate and divisional functions.

7. 2. 1. The size of the corporate centre

Measured by the number of full-time regular employees, the size of the corporate centres of the respondent firms ranges from a

minimum of 86 to a maximum of 5,049[2]. The average size is 638 (See Table 7. 1.).

Table 7. 1.: Data on the size of the corporate centre

Mean	637.58
Standard deviation	794.75
Minimum	86.00
Maximum	5,049.00

Note n = 55

The size of the corporate centre is likely to be associated with the number of regular full-time employees. Accordingly, a regression analysis for size and employee number was carried out. The result showed that, as expected, the size of the corporate centre was positively associated with the total number of employees with the multiple R = .4871 and p = .0002. The regression equation was expressed as the following equation 7. 1.

Size = 370.474609[a] + .033837[b] (Number of employees).....(7.1)

Notes a = Significant at .0024 level
b = Significant at .0002 level
n = 55

This finding agrees with Young's survey result (1993) that companies with more employees tended to have larger headquarters.

[2] The average of the ratio = (Size of the corporate centre)/(Total regular full-time employees) was 9.1 per cent. The maximum case (a giant heavy industry machinery manufacturer) representing 30 per cent contrasted with the average. The company was contacted for a clarification on this point by a letter, first, and by a phone call. The person who filled in the questionnaire verbally confirmed it.

7. 2. 2. Environmental elements

The questions about environmental elements included in the questionnaire concern the environmental stability of the business, its diversification, and the routine nature of production technology.

Business Environment

Respondents were asked to select from a seven-interval scale ranging from extremely stable (1) to extremely unstable (7). As shown in Table 7. 2., the mean of scores was 4.182. Of the fifty-five respondent firms, 27.2 per cent answered that their business environment was stable.

As also shown in Table 7. 2., it was found that 72.8 per cent of the respondent firms believed that their business environment was either at the middle point (4 in the questionnaire scale) or unstable. Scores concentrated at points 3, 4, 5, and 6. Extreme points (1, 2 and 7) represented only 7.2 per cent.

Table 7. 2.: Stability of business environment

Scores of the environment(*)	Percentage (%)	Cumulative percentage (%)
1	3.6	3.6
2	1.8	5.4
3	21.8	27.2
4	32.7	59.9
5	27.3	87.2
6	10.9	98.1
7	1.8	100
Mean	4.182	
Standard deviation	1.219	

*: The higher the score, the less stable is the business environment (1 = extremely stable; 4 = mid-point; 7 = extremely unstable)
n = 55

Diversification

Respondents were asked to assess how diversified[3] their firms were on the basis of a 7-interval scale with 1 being extremely diversified and 7, not diversified at all.

As shown in Table 7. 3, of the fifty-five respondent firms 21.8 per cent answered that they were diversified, 56.3 per cent (corresponding to scales 5, 6 and 7) considered themselves not diversified.

[3] Based on Rumelt (1982), it was defined in the questionnaire that a firm is not diversified, if related products or product lines sharing the same common market or technology represent over 95 per cent of the total turnover; and a firm is diversified, if unrelated products or product lines which do not share the same common market or technology represent over 30 per cent of the total turnover.

Table 7. 3.: Diversification

Scores of the diversification(*)	Percentage (%)	Cumulative percentage (%)
1	9.1	9.1
2	7.3	16.4
3	5.5	21.9
4	21.8	43.7
5	21.8	65.5
6	27.3	92.8
7	7.3	100
Mean	4.509	
Standard deviation	1.709	

*: The higher the score, the less diversified is the firm (1 = extremely diversified; 4 = mid-point; 7 = not diversified at all).

n = 55

Production Technologies

Production technologies were ranked in terms of seven levels of routineness, based on a scale developed by Woodward (1965) and adapted by Kagono *et al* (1985). The categories range from *continuous process* (the most routine = 1) to *custom technology* (the most non-routine = 7).

As shown in Table 7. 4. the average score of the fifty-five respondent firms was 3.833. Out of fifty-five firms 40.1 per cent considered their production technologies to be routine, while 29 per cent regarded them as non-routine.

Table 7. 4.: Production technologies

Scores of the routineness(*)	Percentage (%)	Cumulative percentage (%)
1	7.3	7.3
2	16.4	23.7
3	16.4	40.1
4	30.9	71
5	3.6	74.6
6	20	94.6
7	3.6	100
Mean	4	
Standard deviation	1.645	

*: The higher the score, the less routine are the production technologies (1 = extremely high routineness; 4 = mid-point; 7 = extremely low routineness).

n = 55

The size of the corporate centre and environmental elements

Pearson's product moment correlation coefficients were computed for the size of the centre and the environmental elements (stability of business environment, diversification, and production technologies) and two-tailed significance was tested.

The result showed that the size of the corporate centre in terms of the number of full-time employees was significantly correlated with the firm's diversification at the $p < 0.05$ level (See Table 7. 5.). A negative correlation coefficient means that the less diversified the firm, the smaller the size of the corporate centre. Two other environment variables, namely, the stability of the business environment and the routineness of production technologies, did not have significant correlation with the size.

Table 7. 5.: Correlation between stability, diversification, and the size of the corporate centre

	Stability	Diversi-fication	Production tech-nologies	Size of the centre
Stability	1.00			
Diver-sification	.0525	1.00		
Production tech-nologies	-0.1144	-.1419	1.00	
Size of the centre	-0.0833	-0.3140*	.1725	1.00

Notes: The scores of the questionnaire go from 1 (extremely stable; extremely diversified; and extremely high routineness) to 7 (extremely unstable; not diversified at all; and extremely low routineness)[4].
* significant at .05 level.
n = 55

Based on the foregoing result that the diversification was significantly correlated with the size of the corporate centre, a stepwise multiple regression analysis was conducted to find out whether there was any significant associative effect among environment variables and the size of the corporate centre.

Due to the entry and elimination criteria for stepwise regression being $F < 2.71$ and $p < .10$, only the diversification variable was selected for regression, as expected. As shown in Table 7. 6., the multiple R was .31396. Equation 7. 2. shows the regression which was significant at .05 level.

[4] A negative correlation coefficient means that the less diversified the firm, the smaller the size of the centre.

Size = 1295.864915[a] - 145.990203[b](Diversification).....(7. 2.)

Notes a = Significant at p < .01
b = Significant at p < .05
n = 55

Considering the fact that the diversification scores range from 1 (extremely diversified) through 4 (midpoint) to 7 (not diversified at all), the negative slope of the regression equation is interpreted to indicate that the higher the score of diversification (that is, the lower the diversification), the smaller is the size of the corporate centre. In other words, the actual relationship is "positive".

Table 7. 6.: Multiple regression on the size of the corporate centre and diversification

Multiple R		.31396			
R Square		.09857			
Adjusted R Square		.08156			
F		5.79548			
Signif F		.0196			
Variables	B[a]	SE B[b]	Beta[c]	T	Sig T
Diversi-fication	-145.990203	60.642766	-.313959	-2.407	.0196
Constant	1295.864915	292.094239		4.436	.0000

Notes a) Coefficients of the regression equation.
b) The Standard errors for the coefficients of the regression equation.
c) The standardised regression coefficients
n = 55

7. 2. 3. Organisational structure

Issues concerning divisional organisation form, functions performed by divisions, and functions performed by the corporate centre are addressed below.

Divisional form

80 per cent[5] of the respondent firms reported that they had divisional structure. This contrasts with Kagono *et al*s finding (1985) that 59.8 per cent of their sample firms had adopted divisional form. Japan Development Bank (1989) stated that 62.3 per cent of the listed firms with over 1,000 full-time employees had adopted divisional form.

Functions performed by divisions

As shown in Table 7. 7., the percentage of the functions performed by divisions is similar to that reported by Kagono *et al*(1985).

Table 7. 7.: Comparison of divisional functions

Divisional Functions	Kagono *et al* (1985)[a]	This research[b]
Production	59.8%[c]	73.3%
Sales	91.5	86.7
Marketing planning	82.6	82.2
Personnel	35.5	37.8
Control	40.1	35.6
Finance	12.2	17.8
Basic research	28.5	20.0
Applied research and development	75.6	71.1
Purchasing	52.4	35.6

Notes. a. n = 291
b. n = 55
c. Percentage of firms in which the function is performed by divisions.

[5] This percentage is high due to some bias which could not be determined. This point will need further empirical research.

Table 7. 8. shows the number of functions performed by the divisions of the respondent firms. The median number of functions performed by divisions was four. On average, the divisions of the respondent firms had 4.6 functions. The maximum number of functions devolved onto divisions was nine, and the minimum number, one.

Table 7. 8.: Functions performed by divisions

Number of functions performed by divisions	Percentage (%)	Cumulative percentage (%)
1	6.7%	6.7%
2	2.2	8.9
3	20.0	28.9
4	24.4	53.3
5	24.4	77.8
6	6.7	84.4
7	2.2	86.7
8	6.7	93.3
9	6.7	100.0

Mean	4.600
Standard deviation	2.016
Minimum	1.00
Maximum	9.00

Note n = 55

As shown in Table 7. 8, nearly 80 per cent of the fifty-five respondent firms had less than five divisional functions. In 26.7 per cent of all divisionalised firms, the divisions did not have a production function and in 14.3 per cent they did not have a sales function. These figures imply that divisions in Japanese firms are often not self-contained and that functional autonomy is emphasised over the integration of functions at the division level.

This fact reflects the organisational structure which Kagono (1992) named a "functionalised divisional" structure.

In the functionalised divisional structure, divisions are not self-contained and complete; namely, they do not contain a full range of functions. Therefore these divisions are not closed, or autonomous. They are grouped into functional divisions performing production and development, and into functional divisions performing sales and marketing units. They need to conduct transactions with each other. Either through strategic and financial plans or through budgeting process, these divisions have to effect mutual co-ordination. In general, mutual co-ordination is carried out laterally among the functional divisions through horizontal information exchange.

Functions performed by the corporate centre

All respondent firms reported that finance and accounting, personnel and human resources management, and strategic and business planning functions are performed by the corporate centre[6]. Other functions performed by over 80 per cent of the corporate centres of the respondent firms are secretarial and legal services, government and public relations, marketing services, information systems, and management services (See Table 7. 9.).

[6] Kagono *et al* (1985) reported that in their sample Japanese firms centralised their personnel and finance functions.

Table 7. 9.: Corporate functions

Function	Percentage of firms	
	(a)	(b)
Finance	100	0
Secretarial and legal	98	2
Personnel	100	0
Public relations	65	35
Strategic planning	100	0
Marketing	92	8
Internal audit	44	56
Information system	89	11
Management service	87	14
R+D	23	77
Engineering	46	54
Physical Distribution	23	77
Purchasing	23	77
Property service	64	37
Administration	54	46
Others	56	44

Notes: (a) = Percentage of firms whose corporate centres perform the function.
(b) = Percentage of firms whose corporate centres do not perform the function.
n = 55

As shown in Table 7. 10, the corporate centre in over 70 per cent of the fifty-five respondent firms performed between 8 and 12 functions. The median of the number of functions performed by the corporate centre was 10, whereas the mean was 10.635, with the standard deviation being 2.701. The minimum and maximum numbers of corporate function were 6 and 16, respectively.

Table 7. 10.: Number of corporate functions and their frequency

Number of corporate functions	Percentage[a]	Cumulative percentage
6	3.8%	3.6%
7	5.8	9.6
8	17.3	26.9
9	11.5	38.5
10	13.5	51.9
11	5.8	57.7
12	25.0	82.7
13	3.8	86.5
14	0	86.5
15	5.8	92.3
16	7.7	100.0

Mean	10.365
Standard deviation	2.701
Minimum	6.00
Maximum	16.00

Note: a) Percentage of the respondent firms whose corporate centres perform the number of the functions.
n = 55

The size of the corporate centre, and divisional and corporate functions

As shown in Table 7. 11, both the number of functions performed by the corporate centre and the number of functions performed by divisions[7] are positively associated with the size of the corporate centre (measured by the number of regular full-time employees) at $p < 0.05$. The multiple R was .43448. This association can be expressed as the following regression equation (7. 3.):

[7] The number of the functions performed by divisions and that of the functions performed by the corporate centre were negatively correlated (-.0872), but it was not statistically significant (p=.578).

Size = - 1055.254471 + 101.409814[a] (N° of divisional functions)

+ 137.020956[b] (N° of corporate functions).....(7.3)

Note: a = Significant at .05 level.
b = Significant at .05 level.
n = 55.

Table 7. 11.: Multiple regression on the size of the corporate centre and the numbers of corporate and divisional functions

Multiple R	.43448				
R Square	.18877				
Adjusted R Square	.14821				
F	4.65400				
Significant F	.0152				
Variables	**B[a]**	**SE B[b]**	**Beta[c]**	**T**	**Sig T**
N ° of corporate functions	137.020956	60.864260	.321828	2.251	.0299
N ° of divisional functions	101.409814	45.119019	.321307	2.248	.0302
Constant	-1055.25447	599.114202		-1.761	.0858

Notes a = Coefficients of the regression equation.
b = The Standard errors for the coefficients of the regression equation.
c = The standardised regression coefficients
n = 55.

7. 2. 4 Summary of the descriptive analysis

The descriptive analysis presented in this section is summarised in Table 7. 12.

Table 7. 12.: Association of the size of the corporate centre with employees number, business environment, and organisational structure

Variables	Statistics
Number of employees*	
Number of employees	Significant at p = .0002
Multiple regression	*Size* = 370.474609 + .033837 (Number of employees) *Multiple R*: .4871
Business environment*	
Stability	Not significant
Diversification	Significant at p < .05
Production technologies	Not significant
Multiple regression	*Size* = 1295.864915 - 145.990203 (Diversification) *Multiple R*: .31396
Organisational structure*	
N° of divisional functions	Significant at p < .05
N° of corporate functions	Significant at p < .05
Multiple regression	*Size* = -1055.254471 + 101.409814 (N° of divisional functions) + 137.020956 (N° of corporate functions) *Multiple R*: .43448

Note * n = 55

7. 3. Tests of the Hypotheses

So far data on the general aspects of the fifty-five respondent firms have been presented including the size of the corporate centre; environmental elements comprising the stability of business environment; diversification and production technologies; and the organisational structure, including divisional form and the number of divisional and corporate functions.

This section analyses empirical evidence to test the hypotheses formulated in Chapter 5 on the relationship between the size of the corporate centre, and vertical and horizontal information flows.

7. 3. 1. First proposition

The first proposition was about the relationship between the size of the corporate centre and the vertical information exchange between the centre and divisions and functional departments.

This proposition relates to the way the centre influences managers lower down and affects the decisions taken by them. Two dimensions of the centre's influence were identified: planning influence and control influence.

Hypothesis 1

Hypothesis 1 postulates that the influence the Japanese corporate centre exerts is higher on planning and lower on control. In order to test this hypothesis, the paired t-test was made for planning and control variables of each respondent firm.

As shown in Table 7. 13., the means of planning and control variables were 2.4091 and 2.7030, respectively. Since the higher the score, the less are the planning and control influences (Scores were typically — 1 = extremely important; 4 = midpoint; and 7 = not important at all), this means that average planning influence was higher than average control influence.

The paired t-test was carried out for planning and control influences in order to see if the difference between these two dimensions of influences was significant or not. The t-score resulting from the paired t-test was -2.72 with the degree of freedom being 54. Since the 2-tail probability was .009, the difference between planning and control influences could be considered significant. Therefore, it can be concluded that planning influence is higher than control influence.

Table 7. 13.: Paired t-test for planning and control influences

	Number of cases	Mean	Standard deviation	Standard error	Maximum	Minimum
a = Planning variables	55	2.4091	.788	.106	4.00	1.03
b = Control variables	55	2.7030	.610	.082	4.17	1.33
Difference mean = (a-b)	Standard deviation	Standard error	t Value	d. f.	p	
-.2939	.801	.108	-2.72	54	.009	

Notes d.f. = degrees of freedom
p = probability of 2-tail test

As shown in Figures 7. 1 and 7. 2 , it was also found out that both the planning and control variable scores were located in the area delimited between 1 and the mid-points 4. As the scores range from 1 (extremely important) through 4 (midpoint) to 7 (not important at all), this means that both planning and control influences are located in high-high area. This conclusion is also confirmed by the fact that averages of planning and control influences are located in Quadrant (IV) of Figure 7. 2.

Figure 7. 1.: Scattergram for planning and control influences

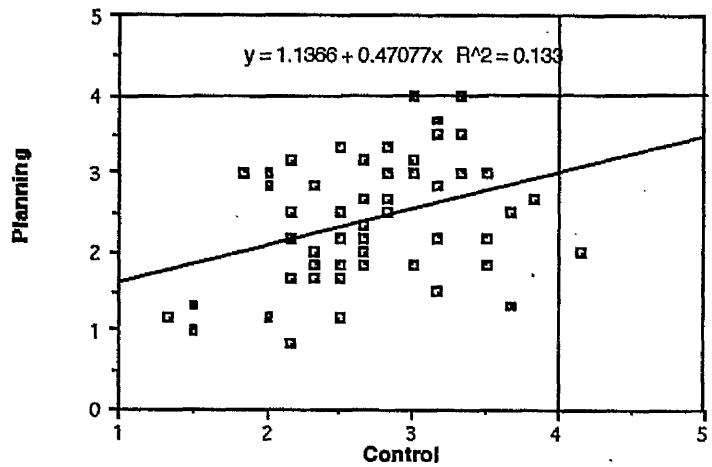
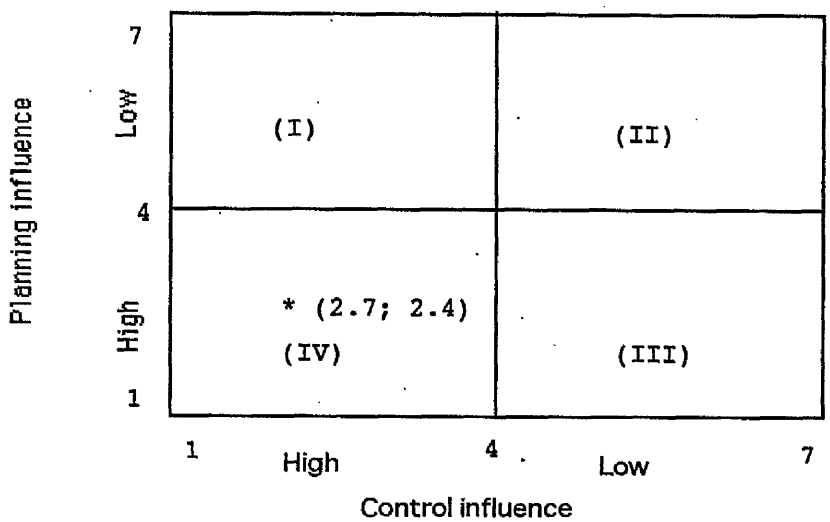


Figure 7. 2.: Planning and control influences



Note * Average control and planning influences of the respondent firms

The strategic management style corresponding to the above, according to Goold and Campbell's classification (1987: 42) , might be "strategic programming". Goold and Campbell describe the characteristics of strategic programming as follows:

> "...the centre is involved in developing strategies at the business unit level, but in addition it attempts to set clear performance targets and to insist that they are met. The style embraces detailed planning, central sponsorship of strategy and tight control against financial objectives and strategic milestones."

However, as shown in Table 7. 14., there was a significant difference between the incentives variable (Variable 6) and the average of other control variables (Variables 1 - 5) at $p < .001$. This points to the possibility that in Japanese firms the control influence is strong, but the type of pressure exerted on managers is different compared with Western firms. Goold and Campbell (1987: 41) report:

> "Where bonuses are linked to performance targets, or where careers are at risk, the pressure of the control process is enhanced. Companies such as Hanson Trust and Vickers believe in providing bonuses that can amount to 30 per cent or more of salary. A number of companies link promotion prospects to the achievement of planned targets."

Both the data analysis of the present research and the survey of relevant literature (*e.g.*, Kono, 1984) on Japanese management provide evidence that the situation at Japanese firms is quite different from Goold and Campbell's description. Further discussion will be made on this point in the next chapter.

Table 7. 14.: t-tests for paired control influence variables

	Number of cases	Mean	Standard deviation	Standard error
a = Mean of Var.1 to Var.5	55	2.3455	.627	.085
b = Var.6	55	4.4909	1.399	.189

c = Difference mean (a -b)	Standard deviation	Standard error	t Value	d. f.	p
-2.1455	1.425	.192	-11.17	54	.000

Notes
Var.1 (Financial returns)
Var.2 (Financial targets versus strategic objectives)
Var.3 (Financial targets)
Var.4 (Financial targets as a promise)
Var.5 (Monitoring)
Var.6 (Division's performance and manager's career)
d. f. = degrees of freedom
p = probability of 2-tail test

Table 7. 15. shows the regression equation of planning influence with control influence (See also Figure 7. 1.). The slope was .47077 > 0. With the scores ranging from 1 (extremely important) through 4 (midpoint) to 7 (not important at all), the positive slope can be interpreted to indicate that the stronger the control influence, the weaker is the planning influence. In other words, the actual relationship is "negative" and there is a kind of "trade-off" relationship between these two influences within Quadrant (IV).

Table 7. 15.: Regression equation of planning influence with control influence

Correlation[a]	.36466	R^{2*}	.13297	S.E. of Est.[b]	.74018	Sig.[c] .0062
Intercept[d] (S. E.)	1.1366	(.4574)	Slope[e] (S. E.)	.47077	(.1651)	

Notes.:
a Pearson's r
b The standard error of estimate
c Statistical significance. In this case, $p < .01$
d The intercept of the regression line.
e The slope of the regression line.
* The coefficient of determination.

Hypotheses 2 and 3

Hypotheses 2 and 3 are about the relationship between the size of the corporate centre and planning and control influences.

Hypothesis 2 postulated that the size of the corporate centre measured in terms of the number of regular full-time personnel is positively associated with the degree of planning influence the corporate centre exerts.

In an attempt at scanning graphically this relationship, a scattergram was plotted for the size of the corporate centre and planning influence. For clearer representation[8], the size of the corporate centre was converted into log scale. Fig. 7. 3. seems to point out that there is a positive, albeit not strong, association between the size and planning influence.

[8] As absolute size of the corporate centre ranges from 86 to 5,049 (Cf. Table 6. 1.), it is easier to detect some association if the Y-co-ordinate scale is "shortened" by means of the conversion of Y-values into log values before plotting them.

In order to test the relationship between the size of the corporate centre and planning influence, a multiple regression analysis was conducted, using planning variables as independent variables.

The results are summarised in Table 7. 16. F-value (p = .6713) shows that the multiple regression equation did not have statistical significance. Similarly, none of the planning variables showed any significant t-values regarding their regression coefficients. These results imply that there was no statistically significant association between the size of the corporate centre and planning influence, as conjectured. Hypothesis 2 should then be rejected.

Figure 7. 3.: Scattergram for the size of the corporate centre and planning influence

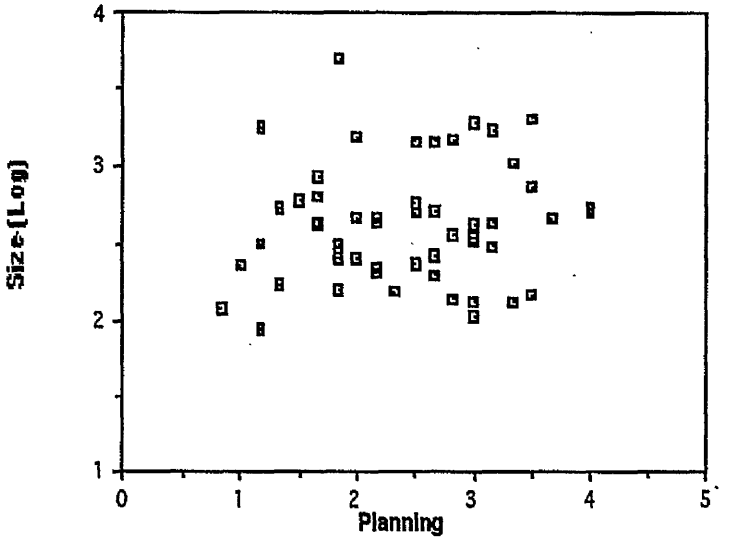


Table 7. 16.: Multiple regression on the size of the corporate centre and planning influence

Multiple R	.27871
R Square	.07768
Adjusted R Square	-.03761
F	.67380
Signif F	.6713

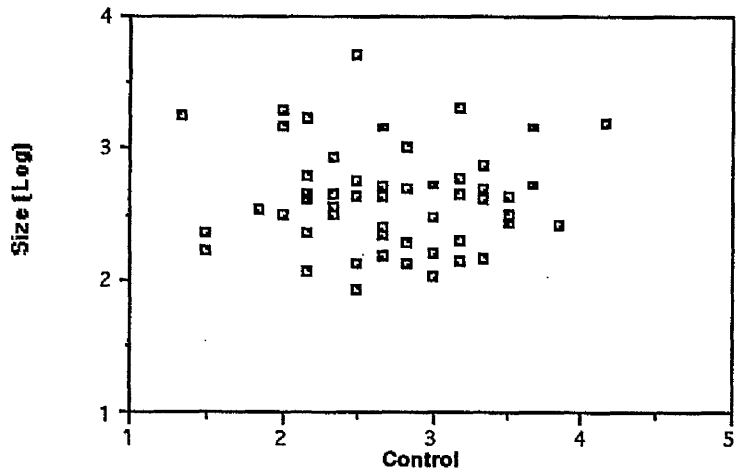
Variables	B[a]	SE B[b]	Beta[c]	T	Sig T
Var. 6	-157.995019	140.416391	-.200464	-1.125	.2661
Var. 4	72.191261	73.902520	.158509	.977	.3335
Var. 3	203.833492	115.898992	.286495	1.759	.0850
Var. 1	42.889771	136.343774	.073732	.315	.7545
Var. 5	71.852886	113.723235	.111779	.632	.5305
Var. 2	-87.808843	147.484350	-.146419	-.595	.5544
Constant	211.548800	411.564958		.514	.6096

Notes a = Coefficients of the regression equation.
b = The Standard errors for the coefficients of the regression equation.
c = The standardised regression coefficients
n = 55

Now that Hypotheses 1 and 2 have been discussed, the only remaining hypothesis forming part of the first proposition is Hypothesis 3. It posited that the size of the corporate centre is negatively associated with the control influence the corporate centre exerts.

Following the example of the testing of Hypothesis 2, a scattergram was plotted for the visual examination of the relationship between the size of the corporate centre and control influence. As shown in Figure 7. 4., visually it was impossible to determine if there was any relationship between these two sets of variables.

Figure 7. 4.: Scattergram for the size of the corporate centre and control influence



As in the case of Hypothesis 2, a multiple regression analysis was then conducted. The multiple regression equation does not have statistical significance at p = .1492 (See Table 7. 17). Accordingly, Hypothesis 3 should be rejected[9].

[9]The correlation coefficients between planning influence, control influence and the size of the corporate centre were computed. With p = .846 (size and planning) and p = .648 (size and control), none of these coefficients was significant. This confirms the results obtained in the multiple regression.

Table 7. 17.: Multiple regression on the size of the corporate centre and control influence

Multiple R	.41929				
R Square	.17581				
Adjusted R Square	-.07059				
F	1.67089				
Signif F	.1498				
Variables	**B[a]**	**SE B[b]**	**Beta[c]**	**T**	**Sig T**
Var. 6	-48.127199	51.187524	-.130781	-.940	.3519
Var. 1	-98.063139	70.136206	-.209582	-1.398	.1686
Var. 4	-153.715673	127.263430	-.237451	-1.208	.2331
Var. 5	-10.111928	68.799072	-.021005	-.147	.8838
Var. 2	-61.150472	65.316581	-.139950	-.936	.3539
Var. 3	335.129109	121.955614	.557233	2.748	.0085
Constant	884.746246	322.574553		2.743	.0086

Notes
a = Coefficients of the regression equation.
b = The Standard errors for the coefficients of the regression equation.
c = The standardised regression coefficients
n = 55

In summary, on the one hand; it was found that Japanese firms have large corporate centre (9.1 per cent over the total employee number) and, on the other, they have more "hands-on" management style and a high planning influence is exerted from the centre.

Therefore, though Hypotheses 2 and 3 of this research were rejected, it might be concluded that "hands-on" approach increases the size of the corporate centre, because it reflects more information-processing. Further research will be needed on how differently planning and control influences are combined in "hands-on" and "hands-off" approaches.

7. 3. 2. Second proposition

The second proposition concerned the relationship between the size of the corporate centre and horizontal information linkages. This relates to the way that Japanese firms are organised and managed.

Linkages can result from the sharing of common clients, of common production technologies, etc.

The existence of linkages requires co-ordination. In Japanese firms co-ordination is made through horizontal information exchange among divisions or functional departments. Thus, information exchange is decentralised, but the decentralised approach to information exchange is claimed, *e.g.*, by Aoki (1988), to be associated with a centralised approach to administrative management, which leads to increase in the size of the corporate centre.

Therefore, Hypothesis 4 postulated that the size of the corporate centre in Japanese firms measured by the number of regular full-time personnel is positively associated with the linkages among divisions or departments.

Multiple regression was used to probe into the possible association existing among linkage variables and the size of the corporate centre. For n = 55, the multiple R was .41666. R square was .17361. Since p = .0867 > .05, the result was not statistically significant. As shown in Table 7. 18., Var. 5, Var. 3 had significant terms in t-tests. These variables correspond to product development and production technologies, respectively. Overall, the hypothesis did not seem to hold.

Table 7. 18.: Multiple regression on the size of the corporate centre and linkages

Multiple R	.41666
R Square	.17361
Adjusted R Square	.08928
F	2.05875
Signif F	.0867

Variables	B[a]	SE B[b]	Beta[c]	T	Sig T
Var. 5	-301.402542	101.389991	-.691433	-2.973	.0046
Var. 1	-137.138266	75.436376	-.301271	-1.818	.0752
Var. 2	22.665618	76.709291	.047429	.295	.7689
Var. 3	191.976825	95.381243	.466727	2.013	.0497
Var. 4	139.605422	121.088720	.296874	1.153	.2545
Constant	917.159945	350.541621		2.616	.0118

Notes
a = Coefficients of the regression equation.
b = The Standard errors for the coefficients of the regression equation.
c = The standardised regression coefficients
Var. 1 = Customers
Var. 2 = Purchases between divisions
Var. 3 = Production technologies
Var. 4 = Marketing skills
Var. 5 = Product development
n = 55

However, based on a scattergram to visualise the relationship between the size and linkages, it was suspected that there was some intermediate effect upon the relationship between the corporate centre size and linkages by the stratification of the total employees. All of the fifty-five respondent firms were stratified by the use of critical points relating to 5,000 and 10,000 employees, and the sample was divided into three groups of similar sub-sample size[10].

Dummy variables were then used to test the effect of employee number on the relationship between linkages and the size of the corporate centre. As Table 7. 19. shows, the multiple R increased to .56895, and there was a significant change in the value of Sig F (= .0084). Var. 6 and Var. 7, which represent the dummy variables, had p = .02 and .0165, respectively.

Therefore, a sub-sample was taken of the respondent firms with over 5,000 employees (n = 23) to further test the relationship between the linkages and the size of the corporate centre[11].

[10] The cutting-off was rather arbitrary; however, the sample could be divided into two (over 5,000 or less than 5,000 employees):

Classification by employee numbers	Employee number
< 5,000 employees	32
10,000 > employees ≥ 5,000	13
10,000 ≤ employees	10

[11] The multiple regression analysis on the other two sub-samples was also run, but neither of them was significant.

Table 7. 19.: Multiple regression on the size of the corporate centre and linkages with employee size-related dummy variables

Multiple R	.56895
R Square	.32371
Adjusted R Square	.22080
F	3.14544
Signif F	.0084

Variables	B[a]	SE B[b]	Beta[c]	T	Sig T
Var. 7	149.277079	63.612268	.305994	2.347	.0233
Var. 5	6.186777	26.417574	.051463	.234	.8159
Var. 1	23.797367	18.852140	.188951	1.262	.2132
Var. 6	-182.930246	73.513566	-.340697	-2.488	.0165
Var. 2	.013495	19.968474	.000098	.001	.9995
Var. 3	-23.688762	25.430380	-.210969	-.932	.3565
Var. 4	16.464608	30.052206	.125047	.548	.5864
Constant	181.372835	103.909414		1.745	.0876

Notes
a = Coefficients of the regression equation.
b = The Standard errors for the coefficients of the regression equation.
c = The standardised regression coefficients
Var. 1 = Customers
Var. 2 = Purchases between divisions
Var. 3 = Production technologies
Var. 4 = Marketing skills
Var. 5 = Product development
Var. 6 = Dummy variable[12]
Var. 7 = Dummy variable
n = 55.

[12] Dummy variables used were:

	Var. 6	Var. 7
Employees < 5,000	0	0
5,000 ≤ Employees ≤ 10,000	0	1
Employees > 10,000	1	0

The result was that the multiple regression equation was statistically significant at $p < .05$. The multiple R was .70723. The linkage variables with significant t-scores were Var. 5 and Var. 1, which represented shared product development skill and shared customers. The regression coefficients were, for each of these two variables, -514.103714 and -449.636439, respectively (See Table 7. 20.).

Chapter 8 will discuss the question why these two areas, namely, shared product development skill and shared customers, are associated with the size of the corporate centre.

As the variable scores range from 1 (extremely important; or definitely true) through 4 (midpoint) to 7 (not important at all; definitely incorrect), the negative coefficients actually indicate a 'positive' relationship, which means that when there is a stronger linkage among divisions or functional departments, as the size of the corporate centre increases[13].

[13] While Var. 4 (Marketing skills) showed a positive relationship with the size of the corporate centre, Var. 2 (Purchase from each other) and Var. 3 (Production technologies) were negatively associated with the size of the corporate centre. However, the regression coefficients of these three variables did not have statistical significance (p = .6875, .2677, and .0835, respectively).

Table 7. 20.: Multiple regression on the size of the corporate centre and linkages for the respondent firms with over 5,000 employees.

Multiple R	.70723
R Square	.50017
Adjusted R Square	.34398
F	3.20223
Signif F	.0342

Variables	B[a]	SE B[b]	Beta[c]	T	Sig T
Var. 5	-514.103714	178.465293	-.744639	-2.881	.0109
Var. 1	-449.636439	164.161475	-.623743	-2.739	.0146
Var. 2	242.735606	211.357056	.275820	1.148	.2677
Var. 4	-110.184582	268.957186	.720836	1.846	.0835
Var. 3	452.087935	244.899883	.720836	1.846	.0835
Constant	2369.886653	990.113501		2.394	.0293

Notes
a) Coefficients of the regression equation.
b) The Standard errors for the coefficients of the regression equation.
c) The standardised regression coefficients
Var. 1 = Customers
Var. 2 = Purchases between divisions
Var. 3 = Production technologies
Var. 4 = Marketing skills
Var. 5 = Product development
n = 23

Therefore, it may be concluded that Hypothesis 4 holds with a modification relating to the size of the firm measured by the number of employees and that, with this modification, linkages in terms of shared customers and shared product development are positively associated with the size of the corporate centre.

7. 4. Recapitulation and Evaluation of the Analysis Results

This section contains a recapitulation and evaluation of the results to reassess the propositions and hypotheses of this research. These results will be illustrated with some case materials in the next section.

The results of the data analysis indicate that the propositions and hypotheses need to be modified. There are four sets of findings.

In the first place, although planning influence was higher than control influence, it was found that the average scores of both these dimensions were located in the high-high area, namely, in the area of high planning and high control influence. This means that, although the planning influence and control influence were in a negative association, it would still be difficult to separate the size-increasing effects of planning influence (Hypothesis 2) and the size-diminishing effects of control influence (Hypothesis 3). Therefore, the separate effects of planning and control influences on the size of the corporate centre, as evidenced by some researchers (*e.g.*, Young, 1992), should be modified in the case of Japanese firms.

In the second place, no statistically significant association exists between the size of the corporate centre and the planning influence or between the size of the corporate centre and the control influence. On the other hand, it was found in this research that (1) the sample Japanese firms have a large corporate centre representing an average 9.1 per cent of the total employees and (2) the sample firms exert from their centre high planning and high control influences.

In the third place, in the sub-sample of the firms with over 5,000 employees, the size of the corporate centre and the linkage variables were positively associated. The linkage variables which were statistically significant in this association were shared product development skills and shared customers.

In the fourth place, though not in our main hypothesis testing, it was found that diversification and the size of the corporate centre were positively associated. The same was true of the number of corporate and divisional functions, both of which had a significant positive relationship with the size of the corporate centre. Likewise, employee number was positively associated with the size of the centre.

7. 5. Illustration of the Findings with Case Materials

For the illustration of the findings mentioned in the foregoing 7.3 and recapitulated in 7. 4., this section provides some case materials:

(1) on the central role the corporate centre plays in the promotion of new business, creating a linkage in the form of shared customers — Kawasaki (with over 5,000 employees);

(2) on the high planning and high control influences exerted by *large* Japanese corporate centres — Matsushita; and

(3) on how one of the linkages (shared product development) is coped with by the corporate centres of the firms with over 5,000 employees — Sharp and Kao.

In this research, of the four hypotheses, Hypothesis 1 and Hypothesis 4 were found to prove significant, albeit with some qualifications. The Matsushita case relates to Hypothesis 1, whereas the Kawasaki, Sharp and Kao cases correspond to Hypothesis 4.

The case materials are a mixture of the primary and secondary sources. The Kawasaki case is drawn from the professional experience of the dissertation's author. Takahashi (1981) and Bartlett and Ghoshal (1988) provide case descriptions for Matsushita, and both Nonaka and Takeuchi (1995: 160-196) and Bartlett and Ghoshal (1989), for Sharp and Kao. Sharp and Kawasaki are sample firms of this research.

7. 5. 1. Relationship between the corporate centre and shared customers

The following Kawasaki case illustrates the role the corporate centre plays in the company-wide promotion of new business, creating a linkage in the form of shared customers. It also gives an insight into how the size of the centre increases to cope with a larger horizontal information flow as a consequence of the creation of linkages.

Kawasaki Heavy Industries

(Employees: 17,495; the corporate centre: 1,500)

Kawasaki Heavy Industries (KHI) is the nucleus of the Kawasaki group formed by KHI, Kawasaki Steel and K-Line. It is one of a few cases among the sample firms which have the complete divisional form in which divisions are given the majority of functions including personnel management (although the recruitment is made by the corporate centre).

After the Petroleum Crisis of 1970s, KHI became knowledgeable in JIT (the Just-in-Time System) by despatching a group of engineers to Toyota, and adapted it to different manufacturing methods from mass production products (such as motorcycles) to made-to-order products (such as huge structures). In 1985, Price Waterhouse Spanish Firm (PW) decided to seek for its Management Consultancy Division support from a Japanese manufacturing firm concerning JIT. PW instructed the author of this dissertation to establish contact with KHI.

The author sent a private letter to Mr K Andoh, a personal friend of his, and, at that time, the manager of Battle Ship Department at KHI. (The letter was a private one instead of a formal and official one from PW, since an official letter would have been taken up and studied through the official channel which might have hindered Mr Andoh from making use of his personal network within the firm.)

The letter was followed by several telephone calls from the author. Mr Andoh contacted the Production Technology Department functioning as the internal technology adviser to KHI line divisions. The reaction of the Production Technology Department was negative.

Mr Andoh then transferred the issue to the Corporate Marketing Group (CMG)[14]. The head of CMG considered it very interesting and initiated contacts with several divisions that might help him. An invitation was then sent to PW so that its managers might visit KHI factories and explain PW's interest in signing a technical agreement with KHI.

PW's visit to Japan was followed by a trip of the CMG's head to Spain to reconfirm PW's intention. Although the head of CMG was not sure if JIT could technically be implemented in Spain, he

[14] The Corporate Marketing Group (CMG) is a staff department. It is therefore a cost centre, its function being the co-ordination or sometimes the conducting of businesses which are not taken care of by line divisions. A typical example is a feasibility study of a shipyard in Pakistan carried out by CMG. The study was made on behalf of Japan's Plant Export Association. KHI's name did not appear anywhere in it (but if it had been done by line division it would have charged the cost to the Association and KHI's name would have been mentioned in the report). Such a feasibility study was a necessary step for KHI to bid for the actual construction work of the shipyard. It enabled KHI to incorporate some information that could direct the entity inviting tenders towards the specifications of KHI.

appreciated the keen interest of PW in the issue and determined to do his best to help. Moreover, KHI was interested in experimenting in "pure" technology transfer as business, because, although it had a number of overseas licensees, the technology transfer had always been linked to the sale of equipment components.

In view of the Production Technology Department's reluctance towards this business, the head of CMG recruited from line divisions an engineer specialising in JIT and a co-ordinator who could speak Spanish (*i.e.*, the size of the corporate centre increased). At the same time, the head of CMG initiated his efforts to build up a network of sympathisers to this business in relevant divisions. Above all, the Consumer Product Division (CP) and Structures Divisions showed interest in it. The KHI's president was also supportive, because he had travelled many times to Spain for marine turbine business and liked the country.

The licence agreement between PW and KHI was signed in 1986. The CMG signed on the part of KHI, a situation observed by KHI people to be quite unusual, since it was not customary that a staff department should appear as the active part of a contract. Such an arrangement was necessary, however, given the nature of the business, which comprised several divisions.

The head of CMG was in a privileged position to promote a business that might need the support of different divisions. First, he had a wide personal network cutting across the organisation. He firmly believed that a person's capability is a function of the level of network he or she may have. In a firm like KHI, famous for its

individualistic approach to business, this is very important. This atmosphere is summed up in the expression: " I will do it, because the person in charge is Mr so-and so."

The head of CMG had been assigned to several departments. He first worked for Corporate Planning, which allowed him to get acquainted with people from different line divisions. After working for Corporate Planning for ten years, he was transferred to the Prime Mover Division, where he worked as a marketing specialist. Eight years afterwards he was appointed the head of KHI's Houston Office, before finally landing in CMG. KHI's personnel department rotates KHI's staff through different posts which could offer them a chance to widen their personal network. This seems particularly true in the case of the head of CMG, since he is a graduate of the Tokyo University. KHI, as a typical "old-establishment" firm used to set great store by the graduates from state universities, above all, those of Tokyo and Kyoto.

Second, CMG was assigned the role of distributing the Business Development Fund, used for the promotion of new businesses that could be thwarted by the lack of budget from line divisions. Although the amount of the Fund is as small as 200 to 300 million yen (and a normal business project could be 500 to 600 million yen), the allocation process of the Fund enabled CMG to foster good relationships with line engineers.

This operational mode has some rather peculiar characteristics. For example, even if the agreement became quite well known among KHI's staff and everybody including the chairman and the president

knew that the head of CMG was instrumental for it, he could not expect any promotion nor special remuneration. The promotion of a person is not dependent on each separate and individual event, but is based on a global review of his or her performance. This dissuades individuals from seeking their personal advancement by short-winded projects to the detriment of their firm.

Furthermore, for KHI staff, there is no such thing as Kawasaki Heavy Industries, Ltd., but many "Kawasakis" based on business divisions. It is therefore very important that the corporate centre plays an active role in the issues related to the firm-wide and across-the-board businesses.

7. 5. 2. High planning and high control influences by large corporate centres

The Matsushita case illustrates how a large corporate centre exerts high planning and control influences. Avoidance of initiatives from the centre, the budget as a contract between the centre and the businesses, frequent monitoring of performance, and strong pressure on businesses with performance problems are the means of high control influence used by the centre. A high planning influence is seen in centralised functions, values, people development, control of prices, and financial growth.

Matsushita Electric Industrial

(Employees: 49,762; the corporate centre: 3,500)

At a cursory glance, Matsushita is a Financial Control company, namely, a company with the high control and low planning influences from the centre (Goold and Campbell, 1987). The characteristics of a Financial Control company stand out in Takahashi's (1981) description of Matsushita. Thus, at Matsushita, the centre's relationship with the divisions and departments is characterised by (1) the delegation of responsibility for strategy development to business unit and even profit centre level, (2) a transparent flow of information between the businesses and the centre, (3) a focus on the budget process as the most important planning process, (4) avoidance of initiatives from the centre in the form of themes or thrusts, yet liberal use of suggestions from the centre where appropriate, (5) insistence that the budget is a contract between the centre and the businesses and that annual financial performance is the critical measure of achievement, (6) frequent monitoring and review of performance against budget, and (7) strong pressure immediately applied to businesses with performance problems and management changes readily made in the face of continued problems.

<u>High control and high planning influences</u>

Despite the characteristics of a Financial Control company described above, Matsushita has some added ingredients that are not observed in UK's Financial Control companies. The difference lies in the centralised functions performed by the large centre, combined

with strong shared values, people development, control of prices, and financing growth (of which later).

Therefore, Matsushita may be classified as a high control and high planning influence firm on the ground that, in addition to the high control influence which is explained below, the centre exerts in a subtle manner planning influences through:

- strategic themes revolving around the centre's vision on the firm's 'distinctive competence';
- broad strategic thrust (although the businesses are free to devise plans to achieve their targets, the guidelines are provided by the centre);
- specific suggestions.

High control influence: divisionalisation with business autonomy

The company is decentralised. Each product and some functions, such as distribution, have been set up as business units ('departments' in Matsushita terminology). The general managers in charge of the departments are autonomous. They are expected to develop strategy and advance their businesses without assistance from the centre. All inter-company trading is carried out at arm's length — at the market rate. There are no centrally imposed transfer prices.

Departments are grouped into divisions of like products. The division managers have an important role in monitoring, encouraging and developing each department and the product range of the

division. But the division layer is 'transparent' — the department general manager is responsible for performance directly to the head office.

High control influence: Budget system

The central control process is focused on a 6-month operating budget. Whereas the Financial Control companies in the UK all use an annual budget cycle (Goold and Campbell, 1987), Matsushita has a 6-monthly cycle. The budget is reviewed by the finance function and the division managers, and then goes to the president for approval. It is then handed back to the department as the 'Basic Management Programme' and becomes — in the company's own words — a 'promise between the president and the manager'.

The programme is monitored closely, and variances frequently result in the formation of a task force, including controllers from the finance function, to get the department back on track. Failure to deliver on the 'promise' is viewed with great concern by both the department and the centre, and may result in the manager being assigned a different position 'where his talents are more suited to the task'.

In a sense, Matsushita's 6-month cycle gives a stronger short-term focus than the normal British cycle of 12 months. Directors in Britain complain about the short-term focus of capital markets that respond to 6-month earnings statements (Goold and Campbell, 1987). But the response within Matsushita to variances against the 6-month programme of a department is much more acute and

focused than the reaction of the capital markets. The director of finance explained the system: 'If a department's performance is good, we will give them a word of praise. If performance is bad, we offer understanding and advice. But we will not give them any special financial help. We expect their accounting to be merciless. We know there is a risk involved in leaving performance to the managers; but we view that risk as tuition for learning management.' The tightness of the control is evident in the phrase 'we will not give them any special financial help'. By this he means that the department is expect to solve the problem without help from the centre. Failure to solve the problem is likely to lead to a management change.

A further illustration of the 'merciless' accounting is given by Takahashi (1981):

> "When new departments are established, the company deliberately underestimates the department's need for working capital. Facing a shortage of operating funds, the new department must work hard to retain and accumulate its earnings."

Almost all the basic elements of Matsushita's management system fit the Financial Control model — the company is divided into small autonomous units; the centre is careful not to interfere or overrule department managers; controls are based on a 6-monthly promise between the centre and the units; and failure to deliver the promise is treated severely.

Financial results have been excellent and, with a strong focus on profitability and a 'merciless' approach to poor performers,

Matsushita is one of the most profitable manufacturing firms in Japan, with a normal return on sales of more than 7 per cent (Takahashi, 1981). Matsushita also builds strong loyalty and high levels of satisfaction among managers. There are critics of the management systems, but they believe that overall the firm is well managed.

To this point, Matsushita looks like a Financial Control company. But there are important differences. First, the centre does occasionally become involved in directing the company as a whole. This is not normal for Financial Control companies. Second, Matsushita has achieved remarkable organic growth, and departments within the firm have attacked and won in many fierce, fast-growing and technically advanced markets, such as video recorders. Both the rapid organic growth and the bold strategies of the departments are unusual features. As Goold and Campbell (1987) point out, the Financial Control style is not likely to be suitable where business unit managers are trying to build positions in fast-moving, R&D led, highly competitive markets. Matsushita appears to have found a combination of values, systems and policies that go a long way to avoiding the disadvantages of the Financial Control style, without losing the benefits[15].

[15] Hamel and Prahalad (1989) have developed an explanation for why Japanese firms appear to have tight short-term controls and yet can follow long-term ambitions. Traditionally this is achieved by the corporate level strategy which lays down medium-term ambitions. The Japanese do not seem to have corporate strategies. Rather they are committed to a 'strategic intent' a target that defines 'winning' for them. Hamel and Prahalad (1989) argue that it is the combination of a 10-, 15- or 20-year strategic intent and a 1- or 2-year budget that enables Japanese firms to grow so successfully.

High planning influence: Five features

Matsushita has five features of its management system that do not occur in Financial Control companies:

1. centralised functions
2. values
3. people development
4. control of prices
5. financial growth.

These five features seem to be channels through which planning influences, epitomised in strategic themes, broad strategic thrust, and specific suggestions are exerted. These are the features of the Matsushita system that help to reduce risk aversion and avoid the low levels of organic growth that are typically associated with tight financial controls.

1. *Centralised Functions*

Finance, personnel and training are all fully centralised. As a result, the centre contains 3,500 people, which compares with the 100 or so people at the centre of the high control influence firms like Tarmac, the Union Pacific, ABB, GE, IDG and CNN (Goold and Campbell, 1987; Peters, 1992; Young, 1993).

In the finance function all controllers and accountants report directly to the centre. Controllers and accountants are seconded from the centre in divisions. (There are as many as 1,500 in the

whole organisation.) As such, those in the divisions and departments have two bosses, reporting both to the centre and to their general manager. But their first loyalty is to the discipline of Matsushita; they have a vital role in the control system. It is likely that these controllers and accountants may be a conducting channel of the centre's 'specific suggestions'.

The other two central functions, personnel and training, exist to create 'harmony' within the company. Takahashi (1981) quoted the personnel manager as saying : 'The only word that best describes our personnel philosophy is "harmony". We are often told by our friends that Matsushita employees have no appeal outside the firm. They say that we have no variety, that we are all alike. But I don't think so. To me we are quite varied.' In other words, the central role of these two functions is to help build and maintain the Matsushita culture.

People (what they believe and the way they think) are seen as the critical resource. As a result, no employee with qualifications beyond those of basic schooling is hired without central personnel screening. Every management promotion is also carefully reviewed by the centre. Moreover, all graduates go through introductory training which involves 3 weeks of general education at the centre, 3 months working with retailers and 3 months working in a factory. The 3 weeks at the centre is devoted almost entirely to philosophy and to explaining Matsushita values. It is to be emphasised, however, that this is not an unusual practice among Japanese firms. What sets Matsushita apart from others is its thoroughness.

Another outstanding aspect of the central personnel activity is job rotation. Each year 5 per cent of the employees rotate from one business unit to another. Equal numbers of managers, supervisors and shop floor employees are involved.

By controlling promotions, indoctrinating and vetting new recruits and moving people about, the personnel and training functions can keep the central values of Matsushita pure and can maintain its strong culture which are instilled as explained below.

2 *Values*

In 1932 Konosuke Matsushita became involved in a religious movement in Japan and came to recognise that employees would benefit from spiritual leadership. 'It comes clear to me', he said, 'that people need a way of linking their productive lives to society' (Takahashi, 1981). He set about developing a philosophy that articulated his own beliefs. 'A business should quickly stand on its own', said Matsushita, 'based on the service it provides society. Profits should not be a reflection of corporate greed, but a vote of confidence from society that what is offered by the firm is valued. When a business fails to make profits it should die — it is a waste of resources to society.'

Takahashi (1981) relates that:

> Chairman Matsushita taught his executives that the autonomous management method was still effective today; detriments could be complemented by managerial devices. Interpreting his ideology, all executives held firm belief that what was essential for the divisional organisation system was

everyone's way of thinking towards it, not a mere shape or pattern; unless top management, more than anyone else, displayed 'go-ahead' attitude, the system could not work; its success was up to top management whether it had a clear-cut policy or not.

Ever since the foundation of the corporation, Mr Matsushita summoning all corporate members early every January, delivered a speech on his business philosophy and policy. In addition to it, whenever the corporation encountered newly developed situations, he expressed his basic attitude and direction to be taken by the members to cope with them.

The late Chairman Matsushita's business philosophy supports the divisional organisation system. Takahashi (1981) cites some examples of the Chairman's philosophy:

Continue business expansion within credit limit!
The scale of our business activities is to be determined by society which evaluates our contribution to it. Business expansion should be made on a profitable basis within the limit beyond which reasonable profit could not be secured.

Human unity and harmony are indispensable for job achievement.
Always show clear objectives and perform business, unifying all members as a united whole! The foundation for unity and harmony is sincerity.

A division manager explained the importance of this philosophy: 'Many Westerners tend to smirk at the higher purposes to which Japanese organisations avowedly dedicate themselves, and assume that these calls to higher values are just thinly disguised manipulation. But it becomes a belief system for thousands of people who work for that company — a human value beyond profit to which their productive lives are dedicated.'

Values such as 'continue business expansion within credit limit' and 'human unity and harmony are indispensable for job achievement' go a long way to easing some of the problems created by decentralisation and by tight controls. By a combination of the value system and the behaviour of central managers, the divisions and departments keep their eyes on the long term, while being pushed to deliver short-term performance.

The firm has some systems that help to reinforce the need for co-operation, harmony and the greater good. For example, once a month department and division managers meet the chairman for an informal coffee morning. This provides managers with a chance to co-ordinate with others in the firm. It is also an opportunity for the chairman to reinforce the values and ideals. Each morning before work, every employee recites the company values. 'It seems silly to Westerners', said one executive, 'but it's like we are all a community' (Takahashi, 1981). Also three or four times per year each employee is expected to give a 10 minute talk to his work group on the firm's values and its relationship to society.

These systems make sure the values are imprinted on the firm. But there are also systems to reinforce the importance of short-term performance. Division managers attend quarterly peer reviews, at which their performance is shared with the group. The managers are grouped into A, B, C and D classes. The A-rated managers give their presentations first and the Ds come last. No one is openly criticised, but each leaves determined not to be in the C or D class at the next presentation.

The observers of Matsushita agree that its value system is an essential ingredient to the success of the management approach. It makes it possible for managers to interpret the activities of the centre in the most favourable light. Criticism from the centre can then be viewed as 'training'. The transfer of poor performers to more suitable jobs is seen as character-building for the individual and "does not cause others to view them negatively" (Takahashi, 1981).

It is the value system that makes managers feel comfortable with tight financial controls. And it is their belief in the values that causes them to maintain a long-term view. Despite the centre's insistence on meeting the budget, one manager is quoted by Takahashi (1981) as describing the performance evaluation system as taking the long-term view:

> [They judge us] I'm sure, by our total abilities as men rather than our fragmented capabilities as managers. Even if our department's performance is very poor, we will not be fired. Rather we will be judged by the reliability of our policy and programmes for the upcoming periods. Speaking for myself, I don't feel like I am being evaluated constantly, nor do I feel guilty for one year's bad performance. I am evaluated, I believe, on the long-term perceptions rather than short-term performance.

To an outsider, these words seem loaded with contradictions. But the contradictions are judged against a value system. By managing these values, Matsushita appears to have squared the circle; to have achieved a focus on short-term performance without sacrificing a long-term commitment.

3. *People Development*

One of the central values is the importance of people. In the relationship between the centre and the departments, whether at a formal control meeting or an informal gathering, attention is always paid to the issue of how best to develop the managers involved. A pure task orientation is virtually non-existent. Every situation involves a task which is seen also as training opportunity. Even when the centre is probing and challenging managers about some trouble spot, it is not seen as threatening. 'The curious twist to these interventions', says one Matsushita division manager, 'is that they never seem like inquisitions. You feel senior management is doing it to train you, to build your competence for the day when they will no longer be around.' This fundamental tenet provides a human dimension even for a trouble-shooting session that might otherwise seem harsh and cold-blooded.

Matsushita's corporate centre believes that it is more important to get managers to understand what needs doing than to fix the problem immediately. Once they understand, they will be able to avoid the problem next time. A product group manager talking about conflicts of opinion said 'we try to get the facts out on the table and let reason speak for itself. We build "acceptance time" into these discussions. By that I mean thinking about things. We press — but we always try to allow people to come around to a point of view in their own way.'

4 *Control of Prices*

Up until the 1970s founding chairman Matsushita himself controlled price level. Product prices could not be changed without his approval. Since the 1970s this responsibility has been devolved to the division levels.

The importance of central decision-making on prices is unclear. It obviously must have a major influence. The most important influence is presumably to signal to the general manager of the department whether he should be going for growth or not. It would be fascinating to know on what criteria the centre choose one price from another and how the negotiation between the centre and the department is carried out. It seems that prices are frequently set below the market level. The centre's contribution is, therefore, a critical strategic input.

5 *Financial Growth*

The departments must submit 60 per cent of their profit to the centre, but they can retain 40 per cent for expansion and growth. In addition, departments can borrow from the centre. The 60-40 split is not sacrosanct — some departments may be asked for more or less than 60 per cent — but it is a normal split.

The interesting aspect of this system is that it acknowledges that some of the profit and all depreciation belongs to the department. If the department think they can get a better return than the money market rates offered by the centre, they are free to invest as they

please. This system is not operated in divisionalised firms in UK or USA.

Retained earnings can be spent freely. Managers believe that this creates an added incentive to strive for high profitability, as well as helping to focus attention on growth. It also means that capital approval requests are limited to major proposals, where a business wants to reach beyond its own resources to expand. The centre can then deal with these requests in much the same way that the capital markets would.

7. 5. 3. Relationship between the corporate centre and shared product development

The Sharp and Kao cases depict the way the corporate centres of Japanese firms (with over 5,000 people) cope with one of the linkages, namely, shared product development. This relates to the finding that in firms with over 5,000 employees, the size of the centre and the linkage variables are positively associated.

The Kao case describes the way the corporate centre creates information flows and makes them fluid through the use of free access to information, open floor allocation, open meetings, and fluid personnel change. All these information flow devices are designed to equip its divisional system with the mechanisms for active information sharing and direct employee interaction.

Kao Corporation

(Employees: 7,021; the corporate centre: N/A.)

Kao is at present Japan's leading household and chemical products manufacturer. It has 18 divisions, including the Home Product Division, Sanitary Product Division, and Chemical Division. Kao's corporate centre believes that direct communication among the employees of different divisions becomes limited in the conventional division system, and is thus striving to achieve active interaction among its employees. It also believes that direct interaction among employees generates creative ideas. But organisational members cannot interact equally when holding different amounts of information. To correct this imbalance, "information sharing" is regarded by Kao's centre as the principal tenet that defines Kao's organisation. The centre has introduced various mechanisms and support systems that assure the sharing of information. They include "free access to information," "open floor allocation," "open meetings," and "fluid personnel change."

To assure "free access to information," computer systems have been introduced throughout the Kao organisation, with all information being filed in a database (Bartlett and Ghoshal, 1989). Through this system, anyone at Kao can tap into databases included in the sales system, the marketing information system, the production information system, the distribution information system, and the total information network covering all of its offices in Japan. The unique feature of this system is that any company member, no matter what his or her position or to what section she or he

belongs, has full access to the database (except for a limited amount of personnel information).

In the "open floor allocation" system, the divisions and functional groups within Kao are all configured around a large open space. Half of the executive floor space, for example, is occupied by an open space called the "decision-making room." In fact, executives rarely stay in their own offices. Divisional heads hold meetings at the round table located in one of the large open spaces. In the laboratories, researchers do not have their own desks, but share big tables.

The corporate centre further accelerates information sharing and employee interaction through "open meetings." Any meeting at Kao is open to any employee, and top management meetings are no exception. Any employee can attend the relevant portion of the meeting and make his or her opinion known. Through this practice, the centre can acquire insights from those most familiar with the issues at hand, while employees can gain a better understanding of the general corporate policy.

What is known within Kao as the R&D conference is typical of these "open meetings." Through this conference, which is held every quarter, the corporate centre learns about research projects directly from the researchers, while research members gain an opportunity to voice their opinions directly to the corporate centre (including top management). This conference, open to anybody outside R&D, is regularly attended by some 1,800 people (out of a total 7,000 employees).

Kao's corporate centre has designed the "fluid personnel change" system to enhance interaction among members with different experiences (Nonaka and Takeuchi, 1995). For instance, researchers in one division are often transferred to other divisions or to other functional areas, such as sales or finance, on a "whoever is needed, wherever he or she is needed" basis. This kind of active job-rotation system, especially among R&D people, enhances the accumulation and sharing of knowledge and promotes interdisciplinary product development within the firm. For example, Kao entered the cosmetics market in the mid-1980s with the introduction of a skin-care product called "Sofina" that resulted from the co-operative effort of people working in surface-active science and those in biological skin care.

As mentioned above, Kao's organisational structure can be explained as a divisional system equipped with various mechanisms for active information sharing and direct employee interaction. The structure can be considered to be flat, as all members of the organisation are placed on an equal footing and create new knowledge through the direct interaction of their respective functions.

Although Kao's organisational structure is basically a traditional divisional structure, its corporate centre has designed a mechanism by which, when it comes to new-product development, marketing innovation, and human resource management issues, the divisions co-operate in a horizontal manner (Nonaka and Takeuchi, 1995). Besides the vertical product divisions, the corporate centre

organises three "horizontal" committees to deal with cross-divisional strategic issues. They are the Division Strategy Committee, Marketing Innovation Committee, and Human Resource Management Committee.

The Division Strategy Committee, which meets twice a year and is attended by the vice presidents and division heads, determines which new products need to be developed by cross-divisional team. Examples of cross-divisional projects include a hair treatment project for controlling hair hardness, a new cosmetics project for men's use, and an ultrathin paper products project for such products as nappies and sanitary napkins. Members of these teams come from the various divisions as well as from the R&D and production departments.

Kao's project team activities are not limited to new product development; they are applied widely throughout the entire organisation, as in the case of the Marketing Innovation Committee. This committee examines common marketing issues across divisions, including effective market research techniques, the appropriate advertising media mix, and environmentally conscious packaging. The committee forms Marketing Innovation Projects, which tackle these issues and develop appropriate recommendations.

The Human Resource Management Committee is another horizontal cross-divisional committee, which meets once a month and is attended by division heads. This committee reviews the overall status of human resource development across divisions, and is also

responsible for selecting the appropriate members from each division for new product and marketing innovation projects.

Kao's corporate centre applies the idea of horizontal, cross-divisional team activities even to its own staff operation. Each "centre" specialising in public relations, legal affairs, accounting/finance, or human resources carries out normal staff functions, but cross-centre project teams are formed in order to deal with corporate-wide issues, such as the reduction of fixed cost, risk management, working-hour reduction, and the simplification of corporate staff operation.

Sharp Corporation

(Employees: 22,700; the corporate centre: 1,420)

Since its foundation in 1912, Sharp has had a reputation for creating new products — from a self-adjusting belt buckle and Sharp pencil in the early years to liquid crystal projection TVs and electronic organisers today. Our case study will focus on how the corporate centre created an organisation for the pursuit of innovation.

The centre has organised Sharp's day-to-day R&D activities in a typically traditional and hierarchical manner (Nonaka and Takeuchi, 1995). The actual structure consists of the Corporate R&D Group, Business Group labs, and Business Division labs. These three structures are separated on the basis of the time frame required for technological/product development. The Corporate R&D Group deals with long-term (three or more years) R&D themes; and Business

Group and Division labs with short-term (one year and half or shorter) themes.

These three structures are aligned as a traditional hierarchy, with research findings passed down the structures in a top-down fashion. Research findings at the Corporate R&D Group are transferred to the research laboratories of the nine Business Groups, then to the labs of each Business Division. During the product development process, rough prototypes are prepared in advance. Researchers at both the Business Group and the Business Division labs, who receive the prototypes, sometimes relocate to the Corporate R&D Group for a few months to improve their understanding of the research findings from the Corporate R&D Group. When research findings have to be utilised quickly for product commercialisation, the Corporate R&D Group's researchers, in turn, sometimes move down to either the Business Group labs or the Business Division labs. Knowledge concerning R&D is transferred efficiently and combined effectively under this kind of hierarchical structure.

Various meetings or conferences are used to co-ordinate the activities of the laboratories at the three levels (Nonaka and Takeuchi, 1995). They allow R&D members at Sharp to share knowledge not only within each level but also across the different levels. The first is the General Technology Conference, which is held once a month and is attended by the president, vice presidents, executive directors, and managers of the nine Business Group laboratories. They discuss what sort of R&D activities should be conducted at each laboratory for the upcoming one-year period. These discussions, which deal with the grand design of corporate

R&D, often become heated and last as long as six hours, with a break for lunch. The second is the Laboratory Director's Conference, which is held once a month and is attended by managers of both the Business Group and the Business Division labs, the director of the Corporate R&D Planning Office, and the director of the Intellectual Property Office. The Laboratory Directors' Conference makes specific and detailed decisions, including when and how to transfer certain technology to the business groups and which collaborations are needed with an outside party. The third is the Technology Development Strategy Conference, which is held once a month in each Business Group. Participation in this conference is not necessarily limited to lab members of the Business Group, but can include members of the Product Planning Department and the Engineering Department, as well as selected individuals from the Corporate R&D Group. The Technology Development Strategy Conference is not merely a place for receiving technology from the Corporate R&D Group, but a place for deliberating actively on what kind of key technologies should be developed by each Business Group.

Sharp's R&D operations have a traditional hierarchical structure, but when it comes to new product development Sharp's corporate centre utilises the task-force organisation, which is a completely independent, parallel organisational structure. While normal product development activities are carried out within each Business Division, the strategically important product development projects are conducted under the "Urgent Project System." The members of the Urgent Project System are relocated from their original departments and work exclusively for the project team.

The Urgent Project System gives its members, who could be recruited from any section or department within the firm, the same "golden-badge" authority as corporate directors during the project period. Wearing the gold badge carries special significance not only for project members but for other employees at Sharp as well. Urgent Project members develop a priority product or technology within a year or two. But since it is managed directly under the president, the project budget is unlimited. People with the gold badge and their project are given top priority in using company facilities or equipment and in procuring materials.

In addition, members of the Urgent Project can be taken from anywhere in the firm at any time. A department may be deprived of its best people for over a year. The corporate centre has to make every effort during the initial stages to ensure that the system is enforced as originally intended. Each Business Division proposes projects that require company-wide development efforts and completion in a brief period of time. These proposals are either adopted or rejected, or "justified" at the above-mentioned General Technology Conference, the highest decision-making meeting at Sharp.

The success of the Urgent Project System led to changes in Sharp's organisational structure. Sharp's corporate centre recently initiated two strategy meetings — New Life Strategy Meeting and NEWING Product Strategy Meeting — in order to diffuse the Urgent Project idea widely within the entire organisation. In the New Life Strategy Meeting, held once a month and attended by the president, vice

presidents, and managers of the Business Group and the Business Division, the division managers explain new product development plans.

The NEWING Product Strategy Meeting is also held monthly and is attended by 20 people, including the president, vice presidents, and managers of the Business Group and the Business Division. The candidates for new product concepts are proposed by each Business Group or Business Division manager and reviewed for their originality and marketability.

Once a product development plan is recognised by New Life Strategy Meeting or NEWING Product Strategy Meeting, development work begins within the division. The authority given to the development team is similar to that given the Urgent Project, since development team members receive direct support from the president and have the right to ask for whatever co-operation they need from within the firm. It differs from the Urgent Project in that the members basically stay in their original division or department and conduct other work during the development process.

7. 6. Comparison with other empirical studies

This section compares the findings from Japanese firms with other empirical studies on the Western corporate centre.

Child (1973c) conducted a study on the proportion of administrative or supportive employees. Though the concept of supportive employees includes those outside the centre as well, Child's study bears out the relationship between the size of supportive employees and information flows embodied in the organisation's complexity. Therefore, it points to the possibility of such relationship between the centre's size and information flows.

Cresap (1988) posits that information flows resulting from a more hands-on management style increase the size of the centre.

Young (1995) contends that Japanese centres are larger than their counterparts in Germany and UK, and that the number of functions performed by Japanese centres is larger than those of German and UK counterparts.

Child (1973c)

In his search for readily accessible data on the structure of organisations, Child (1973c) brings in the concept of the proportion of employees in administrative or supportive roles. He points out the progressive establishment of specialised functions by which supportive activities are removed from line managers into the care of staff employees.

He hypothesised several determinants of the supportive component, namely, staff employment in organisations and examined them in the light of data from 54 British manufacturing companies. These determinants include the size of the organisation, organisational complexity, spatial dispersion, technology, ownership and control, and membership of a larger group.

Child's definition of the supportive employment differs from that of the employment in the corporate centre. It refers to the total number of employees minus the combination of all direct employees and all managers of direct employment or production areas of work. Therefore it includes the supportive components outside the centre. Still, even taking into account this difference, Child's (1973c) study bears out some of our findings and hypotheses: namely, (1) the size of the centre is in direct proportion to the size of the organisation; and (2) the size of supportive component at the centre relates to information flows — the number of different relationships between personnel in an organisation and the range of specialised tasks they perform — which require larger investment in supportive component to co-ordinate and control.

In the first place, Child (1973c) found out that the relationship of supportive component employees to total employees is strongly linear, with a very slight tendency for supportive employment to curve upwards as size increases. Size of organisation accounts for 91 per cent of the variance (R^2 = .92) in supportive components.

Child's (1973c) findings suggest that the relative size of the supportive component in organisations will rise (1) the more these are spatially dispersed, (2) the more complex are their workflow operations, (3) the fewer workflow divisions they have, and (4) the larger the group of which they form part. Set against size of organisation, however, these other variables provide only a marginal increment to the prediction of supportive employment.

Of the 54 manufacturing companies studied, 51 provided Child (1973c) with a full set of accurate statistics on 16 specialised non-workflow functions. The numbers in maintenance, finance, sales and service, transport and dispatch, quality control and public relations each have over 50 per cent of their variance accounted for by variation in total employment. In contrast, under 20 per cent of the variance of numbers in legal and insurance, market research, training, and employment — personnel — is accounted for by total size, while the figure drops below 10 per cent for the numbers in design and development, office services — statistics, filing, post, and so forth — and production methods. Two conclusions are suggested by these results: (1) factors other than size of organisation are associated with the numbers in certain specialised staff functions and (2) the relative size of each specialised functions is unlikely to be correlated highly in this sample of organisations with the relative sizes of all the other functions.

In the second place, Child (1973c) argues that complexity indicated by measures of horizontal and vertical differentiation and of specialist expertise is found to increase with a larger size of organisation. It is argued that the greater the complexity of relationships and tasks, the larger will be the relative investment in supportive personnel required to cope with consequentially increased difficulties of co-ordination and control. In particular, if bureaucratic solutions are applied to problems of co-ordination and control and new or more elaborate procedures are instituted, presumably more support staff will be required to operate those procedures.

In summary, Child's (1973c) findings point out that total employment in supportive activities displays a strong linear relationship to total organisational employment. Complexity, spatial dispersion, and the number of workflow divisions also provide a basis for predicting total employment in supportive activities.

Cresap (1988)

On the basis of interview and mail surveys with 45 leading British firms, Cresap (1988), a management consultancy firm, found four different types of corporate centre reflecting modes of directing the organisation — *targeting*, *guiding*, *directing*, and *running* corporate centres.

The fundamental management philosophy of the *targeting* corporate centre is 'hands off', underpinned by a belief that this philosophy has motivational benefits for the operating units. A very clear separation between the role of the corporate centre and the activities of the subsidiaries is emphasised. The corporate centre is viewed as 'an overhead' . The size of the centre is 0.1 to 0.7 per cent of the total employees.

The *guiding* corporate centre espouses a 'hands off' philosophy, but its approach is marked by a greater degree of involvement with the operating units. So while operating decisions are largely left to the individual business units, which are set financial targets and held accountable for their performance relative to these, the philosophy is supported by a desire to 'help' the operating units, and to foster the sense of belonging to an 'active corporate group'. The size of the centre is 0.2 to 3.4 per cent of the total employees.

The *directing* corporate centre takes more of a 'hands on' approach in management philosophy. It not only helps the operating units to develop strategic plans, but also provides directional initiatives from the centre, and gets involved in the implementation of business strategies and the integration of major business decisions. The centre has 1.8 to 9.1 per cent of the total employees.

The *running* corporate centre is the most involved of the four types of corporate centre. It is very much 'hands on' in orientation. There is often little effective separation between the corporate centre and the business. The role of the corporate centre is integral to the firm's activities. Plans, policies, and guidelines are developed and monitored from the corporate centre, major operating decisions are taken and, to all intents and purposes, the firm is run from the corporate centre. The traditional distinction between "line" and staff is often neither clear nor relevant. The provision of services to the operating units is a key function for such a corporate centre. The centre's size varies from 3.7 to 27.5 per cent of the total employees.

Cresap (1985) contends that the 'hands-on' approach in management philosophies reflected in a greater number of tasks leads to a larger size of the corporate centre. As the 'hands-on' approach suggests a higher vertical information flow between the centre and lower management, Cresap's contention can be reduced to the relationship between the size of the corporate centre and vertical information flow.

Young (1995)

Young (1995) compared the corporate centres in Germany, Japan and UK drawing data from Passau University's 45 management holding companies in early 1990s, from this research, and from Young and Goold (1993), respectively.

Young (1995) found that the Japanese sample has fewer larger companies than German and UK samples[16]. Whereas in the Japanese sample only two per cent represented firms with over 25,000 employees, the German and UK samples have 36 per cent and 35 per cent, respectively. Japanese corporate centres are substantially larger than those of German and UK multi-business firms. Median corporate centre staff in Japanese multi-business firms ranges from nearly 300 for firms with 5,000 employees to 500 for firms with 5-25,000 employees. Median corporate centre staff in German and UK multi-business firms ranges from 20 to 30 for firms with 5,000 employees to 80 for firms with 5-25,000 employees. It means that, in the lower range, Japanese firms have nearly 10 times as many centre as their German and UK counterparts, and, in the higher range, 4 times as many.

That the Japanese corporate centres are larger than their counterparts in Germany and UK has two implications. First, the "largeness" of the Japanese centres may be explained by the number of the functions performed by them, which leads to more need for information flow between the centre and lower

[16] According to a t-test, the sample firms of this research come from the same population as the sampling frame. Therefore, the employee number of the population firms are not expected to be divergent from the sample firms'.

management. Young (1995) found that all three countries have the finance and control functions at the centre, but other functions like marketing, technical advice, information system, logistics and property management are rarely performed by the centre in Germany and UK firms.

Second, the "largeness" of Japanese centres may shed some light on the discussion detailed in Section 2. 3. 2 concerning alternative explanations of the centre's size. Such a vast difference in the size of the corporate centre in Japanese firms in comparison with German and UK counterparts makes it difficult to believe that it is due to the political explanation advanced by Parkinson (1958). His explanation is that departments grow because managers prefer to multiply subordinates not rivals; and that this empire building is more easily achieved in areas away from direct production, since in production a growth in numbers would often be constrained by technology and by established controls on work load, stock levels, and manning. Such a huge difference in the size as mentioned above among Japanese, German and UK corporate centres needs more "managerial" than political explanation, unless Japanese managers were more biased towards the exercise of political influence than their German and UK counterparts.

Discussions

Child's (1973c) and Cresap's (1988) were cited in this section to support the findings in this research that the centre's size is a function of information flow (linkages). They pointed to the possible

relationship between the size of the corporate centre and information flow or the hands-on and hands-off management styles (which lead to the higher or lower degree of information flow). Young's (1995) study underlined the largeness of the Japanese centres compared with their German and UK counterparts.

The relationship which exists between the centre's size and information flow may be explained as a result of either managerial actions or "sociological" elements discussed in Subsection 2. 3. 2. The case materials of Japanese firms described in Section 7. 5., shed light on this question. They illustrate that the centre's size is a product of managerial actions taken for the centralisation of co-ordination of linkages and the implementation of the features of high planning influence. It means that for the implementation of high planning influence, the centre's size is essential.

The corollary of the centre's size being essential is that down-sizing and process re-engineering, when they affect the centre's size, may result in some difficulties in the flow of information in the firm. This corollary has a practical implication and, as such, will be discussed in Chapter 8.

7. 7. Summary

This chapter has presented the results of the data analysis in two stages. First, a descriptive analysis of the respondent firms was presented. The analysis included the size of the corporate centre, business environment variables (stability of business environment, diversification, and production technologies), and organisational structure variables (divisional form, functions performed by divisions and functions performed by the corporate centre).

The second stage of analysis consisted in testing the hypotheses formulated in Chapter 5.

Hypothesis 1 was confirmed by means of the paired t-test for the planning and control influences, which found that these two sets of influences were significantly different from one another and that the planning influence was significantly higher than the control influence at .01 level. A regression analysis was carried out to determine the relationship between the planning and the control influences.

To test Hypotheses 2 and 3, multiple regression analyses were made for the size of the corporate centre, the planning influence, and the control influence. Pearson's correlation moment coefficients were computed for these three sets of variables. All these statistical tests showed no significant results. Thus, Hypotheses 2 and 3 should both be rejected.

On the other hand, it was found in this research that (1) the sample Japanese firms have a large corporate centre representing an average 9.1 per cent of the total employees and (2) the sample firms exert from their centre high planning and high control influences.

For Hypothesis 4, the multiple regression was first analysed for all respondent firms. Dummy variables were used, which confirmed the significant effect (at .05 level) of employee size on the relationship between the size of the corporate centre and linkages. Afterwards, a multiple regression analysis was conducted which showed a significant (at .05 level) relationship between the size of the corporate centre and linkages for the firms with over 5,000 employees.

In brief, of the four hypotheses, Hypothesis 1 and Hypothesis 4 were found to prove significant, albeit with some qualifications. The Matsushita case relates to Hypothesis 1, whereas the Kawasaki, Sharp and Kao cases correspond to Hypothesis 4.

For the illustration of these findings, some case materials were provided :

(1) on the central role the corporate centre plays in the promotion of new business, creating a linkage in the form of shared customers — Kawasaki (with over 5,000 employees);

(2) on the high planning and high control influences exerted by *large* Japanese corporate centres — Matsushita; and

(3) on how one of the linkages (shared product development) is coped with by the corporate centres of the firms with over 5,000 employees — Sharp and Kao.

A comparison of the findings with Japanese firms was made with other empirical studies on the Western corporate centre. Reference was made to three empirical studies of the corporate centre in Western firms.

These results and findings will lead to conclusions which will be presented in the next and last chapter.

CHAPTER 8: CONCLUSIONS AND IMPLICATIONS

8. 1. Introduction

This last chapter addresses itself to drawing conclusions and implications, based on the analysis of data in Chapter 7.

Section 8. 2 presents and analyse the three main conclusions which are derived from the four sets of findings mentioned in Section 7. 4.

Section 8. 3 connects the results of the present research with the principal works existing in the literature. Afterwards, it assesses the contribution of the present research to this area of management studies.

Section 8. 4 analyses the practical implications which the conclusions suggest for corporate management, and formulates, in accordance with these implications, a series of prescriptions for practising managers.

Section 8. 5 concludes with the recognition of the main limitations of the research. It is followed, in Section 8. 6., by some suggestions for studies which might be undertaken in future, taking advantage of experience gained in the course of the development of the present dissertation.

8. 2. Main Conclusions

As already mentioned, this section contains the central part of the chapter — the drawing and in-depth analysis of the main conclusions based on the four sets of findings described in Chapter 7. (Alternative explanations for these findings will be discussed, although the relationships between planning influence and the size of the corporate centre and those between horizontal information flow owing to linkages and the size of the corporate centre will be justified as the best explanations.)

In the first place, the association of the size of the corporate centre with linkage variables will be discussed.

Second, other variables, which did not form part of the hypotheses formulated in Chapter 5, but were found to have bearing on the size of the corporate centre will be treated. These variables were diversification, the number of divisional functions and the number of corporate functions.

Third, planning and control influences will be discussed in the light of results confirming or rejecting Hypotheses 1, 2 and 3.

8. 2. 1. The size of the corporate centre and linkages

The first conclusion of the research is that the size of the corporate centre measured in terms of the number of regular full-time personnel is positively associated with linkages among divisions or functional departments, when the firm has over 5,000 regular full-time employees. These linkages result from sharing 1) customers, 2) purchase of products, 3) production technologies, 4) marketing skills, and 5) product development among divisions or functional departments. From these linkages it was found that sharing customers and common product development are positively associated with the size of the corporate centre. (This conclusion results from the analysis presented in Section 7. 3. 2.)

Two issues related to the first conclusion: centre size and linkages, and the nature of linkages

There are two issues related to the foregoing conclusion that ought to be further worked out. The first is why the centre size showed a statistically significant relationship with the linkages, when the employee size was over 5,000. The second point refers to the linkages. Why are product development and shared customers associated with the size of the corporate centre? What is the mechanism by which the size of the corporate centre relates to the linkages?

1) The centre's size and linkages

Concerning the first issue, the total employee size might influence both the linkages and the size of the corporate centre. As the company size in terms of the total employee number increases, the number of divisions and functional departments will increase. Accordingly, the need will also grow for institutionalised mechanisms, such as "keiei kaigi", the committee of senior board members, to monitor and co-ordinate the larger horizontal information flow. The number of the staff at the corporate centre will, as a consequence, have to be increased to support these mechanisms.

Alternatively, it ought to be recalled that Equation 7. 1. in Chapter 7 evinced a statistically significant positive relationship between the size of the corporate centre and the number of employees. The growth in the number of employees, then, leads to increase in the size of the corporate centre. It is likely that there is a threshold of corporate size beyond which the supporting role of the corporate centre for the horizontal information flow among divisions or functional departments becomes instrumental. It is probable that, as the use of dummy variables showed, this threshold falls somewhere between 1,500 and 5,000 employees.

In connection to this, Child (1984) reports that, in a survey conducted by him, the more profitable and faster growing companies of 2,000 employees and above were those that developed bureaucracy in the form of highly compartmentalised jobs and areas of work, detailed

procedural and paperwork systems, long hierarchies, and delegation of routine decisions to lower level managers within precise discretionary limits. On the other hand, Child (1973c) argues that total employment in supportive activities displays a strong linear relationship to total organisational employment. The combination of these findings may at least partly shed light on this point.

Further research on this point will be needed, which should take into account the opinion of line managers on horizontal information flow as well as their assessment of the value added by the corporate centre. Section 8. 6. will further discuss this point.

2) Linkages: shared product development and shared customers

The second issue concerns the linkages. The sharing of product development and of customers showed a positive association with the size of the corporate centre at a significance level of $p < .05$ (See Table 7. 18.).

The close relationship between sharing customers and the centre's size may have something to do with the resolution of conflicting interests among divisions vying for the same customers. Co-ordination by the centre and intervention in differences and conflicts among divisions is needed.

The Kawasaki case mentioned in Section 7. 5 illustrates the mechanism by which the centre's promotion of new business for various divisions resulted in the increase in its size. The centre is more involved in integration than in mere conflict resolution.

The positive association between shared product development and the size of the corporate centre could be explained by the need to allocate the staff and financial resources of the firm, which can be done better by a centralised approach.

8. 2. 2. Diversification, divisional functions and corporate functions

The second conclusion that may be drawn is that the diversification of business and the number of divisional and corporate functions are positively associated with the size of the corporate centre.

Three issues related to the second conclusion (diversification, number of corporate functions, and number of divisional functions)

Some discussion will be held below on this conclusion. In the first place, the diversification issue, second, the number of corporate functions and, lastly, the number of divisional functions will be discussed.

1) Diversification

First, it was found that the sharing of common customers (market) was positively associated with the size of the corporate centre at p = .05 level (See Equation 7. 2 and Section 8. 2. 1). An increase in diversification means a decrease in shared markets or customers (by related products or product lines)[1]. It should follow, then, that an increase in diversification leads to a decrease in the size of the corporate centre, but what was observed in the data analysis suggested the opposite.

One possible explanation is that, as both diversification and the centre's size are closely associated with the company size, this common factor leads to a positive relationship between diversification and the centre's size.

An alternative explanation is as follows. Diversification may mean reduced linkage both in terms of shared customers and common product development, which has a reverse effect on horizontal information flow and reduces the size of the corporate centre. Nevertheless, diversification into new areas, industries, *etc.*, removed in their nature from the company's core business may require higher planning influence and hands-on approach, especially in its initial stage. This will result in a larger corporate centre compensating even

[1]For the definition of diversification, see Question 2 (2) of the questionnaire: "Please consider your firm not diversified, if related products or product lines sharing the same common market or technology represent over 95 per cent of the total turnover".

for the size reduction because of smaller linkage and, therefore, in a net increase in its size.

Further study should focus on the diversification strategy of Japanese firms and their scale of economy, especially how different new businesses tend to compare with existing ones in terms of product and client base.

2) Number of corporate functions

Second, the increase in number of the functions performed by the corporate centre was positively associated with its size.

This seems to stand to reason. If the number of corporate functions increases, the size of the corporate centre must increase proportionately even if not to the level of 100 per cent (on the condition that, as the number of corporate functions increases, the number of staff required for each function does not decrease, which cannot be tested from the questionnaire data).

3) Number of divisional functions

Third, the number of divisional functions was positively associated with the size of the corporate centre. This is an interesting finding, because, if an increase in the number of divisional functions meant devolution from the corporate centre, the increase in the number of

divisional functions should have led to reducing the size of the corporate centre. In aid of our efforts to explain this finding, some examples will be cited below.

The first examples concern the "co-existence" of large corporate centres and "strong" divisions. These were found among respondent firms. Those firms whose responses indicated that their divisions were "complete" in the sense that they performed major functions like production, sales, finance, personnel, etc., had nearly 10 per cent of their staff working at the corporate centre[2]. Table 8. 1. shows that ten firms having relatively complete functions in their divisions still maintain a large corporate centre and centralised functions at it.

Another example is a Japanese automobile manufacturer[3]. Although it does not concern the centre-divisions relationship, it still seems interesting, because it sheds some light on the issue under consideration. Some years ago this Japanese automobile manufacturer transferred part of its corporate staff in charge of North American operations to USA. Its intention was to reduce the number of corporate

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[2] Imanishi (1988) cited the following as necessary conditions for the divisional structure to be complete:

1) definition of the basic principles for the management of divisions
2) management control system
3) corporate overhead cost assignment to divisions
4) in-company interest rate
5) assignment of capital to divisions
6) in-company transfer pricing system and right to buy from other outside suppliers
7) reporting system to the corporate centre
8) appraisal system of divisions performance

[3] An interview held in Barcelona in December, 1993 with a planning manager of a Japanese automobile manufacturer.

staff based in Tokyo and, at the same time, to place its staff near the car users' market. The transferred staff were considered to form part of the corporate centre in Tokyo, and not part of the North American subsidiary.

Table 8. 1.: Strong divisional functions and the size of the corporate centre

	Divisional functions										Corporate functions																
(b)	1	2	3	4	5	6	7	8	9	(c)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	(d)
14	1	0	1	1	1	1	1	1	1	89	1	1	1	1	0	1	1	1	1	0	0	1	0	1	1	1	75
14	0	1	1	1	0	1	1	1	1	78	1	1	1	1	0	1	0	1	1	0	1	0	1	0	0	1	63
11	1	1	0	1	1	1	1	1	1	89	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	75
11	1	1	1	1	1	0	0	1	0	67	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	69
10	1	1	1	1	1	1	0	1	1	89	1	1	1	1	1	1	0	0	1	0	1	0	0	1	0	0	56
9	1	1	1	1	1	1	1	1	1	100	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
6	1	1	1	1	1	1	1	1	1	100	1	1	1	1	1	0	0	1	1	0	0	0	0	0	1	1	50
6	1	1	1	1	1	0	0	0	1	67	1	1	1	1	1	1	0	1	1	1	1	0	0	1	1	0	75
6	1	1	1	1	1	1	1	1	1	100	1	1	1	0	1	1	1	1	0	0	0	0	0	1	0	0	50
6	1	1	1	1	1	0	0	1	0	67	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100

Note: 1 = yes, 0 = no

(a) Firms with over 60 per cent divisional functions

(b) (Centre's size/Total employees)*100

(c) (Number of divisional functions/9)*100

(d) (Number of corporate functions/16)*100

Divisional functions	
1: production	6: finance
2: sales	7: basic research
3: marketing planning	8: applied research and development
4: personnel	9: purchasing
5: control	

Corporate functions	
1: finance, accounting	9: management services
2: secretarial and legal	10: research and development
3: personnel, human resources	11: engineering services
4: government, public relations	12: production, manufacturing
5: strategic/business planning	13: purchasing
6: marketing/commercial services	14: property services
7: internal audit	15; administrative services
8: information systems	16: others

The size of the corporate centre in Tokyo in charge of the North American market shrank, but not in proportion to the reduction brought about by the transfer of staff to USA. Over time, the corporate centre in Japan felt the need to make up for the gap created by the transfer of staff to USA, by assigning a certain number of its personnel to communication with the transferees in USA. The information inflow from USA needed to be processed and replied by Japan, which led to an increase in the number of the corporate staff in Tokyo in charge of communication with the staff in USA. On the surface, the cost of personnel has increased, but the firm itself feels benefited from this (not deliberate) arrangement in so far as it now enjoys richer information and higher information-processing capabilities concerning the North American market.

Both these examples imply that the increase in the number of divisional functions is not a result of the devolution of the centre's functions to divisions. The corporate centre in both of these cases transferred functions outside its physical presence with the aim of enriching information.

8. 2. 3. Planning and control influences

The third conclusion of this research is that Japanese firms have higher planning influence than control influence, but that, at the same time, they exert in relative terms both high planning and control influences.

Two issues related to the third conclusion

Two observations will be made on this conclusion: the close involvement of the centre in operations, and the trade-off between planning and control influences.

1) The involvement of the centre in operations

The first concerns the close involvement of the corporate centre in operations. The findings in the data analysis rejected the hypotheses that planning and control influences are associated with the size of the corporate centre, but they also maintained, as the third conclusion suggests, that the centre is closely involved in the management of divisions or functional departments. In other words, planning influence is important for Japanese firms, but so is control influence.

However, this control influence seems to be of a different nature from that of Western firms. There are two sets of circumstances which lead us to believe so. First, in Western firms, the pressure from control influence comes by way of salary and promotion prospects which depend on short-term results. In Japanese firms, on the other hand, control influence does not seem to be directly connected to these two kinds of pressure. Salary does not substantially differ from one person to another on account of short-term performance, if they have the

same hierarchical rank. Promotion prospects are not directly connected to a division's short-term performance, either.

Second, the data from the respondent firms showed a difference at the $p < .0001$ significance level between the incentives variable (division's performance and manager's career) and other control variables. As shown in Table 6. 13., the former's mean score was 4.49 as against the latter's 2.35. It may be deduced from this that the incentives variable is "at odds" with other variables of control influence (*i.e.*, setting objectives and monitoring results). Setting objectives and monitoring results are "tight", but career prospects are less constrained by the division's short-term performance.

It may be concluded from the above that, whereas in Western firms control influence hinges on "punitive" incentives to motivate people on the basis of "the carrot and the stick," in Japanese firms control influence is less "punitive" and less dependent on the individual's "linear" reaction to incentives, both positive (the carrot) and negative (the stick), and is more designed for the improvement of business performance.

2) Trade-off between planning and control influences

Table 7. 14. in Chapter 7 showed that there was a negative association at $p < .01$ level of significance between planning influence and control influence. This means that, as planning influence grew, control influence declined, and *vice versa*, though always within the high planning and high control quadrant (See Figure 7. 2.).

Lacking data, and in particular longitudinal data, it may be risky to speculate upon the reasons which lie behind this trade-off. It could be that there is a trend among Japanese firms, over time, either to lean more on planning influence and less on control influence, or to lean more on control influence and less on planning influence. Further study will be needed to throw light on this.

Recapitulating this section, the first conclusion was about the association of the size of the corporate centre and linkage variables.

The second conclusion referred to the variables which, though they did not form part of the hypotheses formulated in Chapter 5, were found to have bearing on the size of the corporate centre. These variables were diversification, divisional function numbers and corporate function numbers.

The third conclusion was about planning and control influences. It argued that Japanese firms have higher planning than control influence, but that, at the same time, Japanese firms exert in relative

terms both high planning and control influences. Two observations were made on this conclusion.

8. 3. Connection of the Results of this Research with the Literature

As mentioned in the introduction to this chapter, this section will first analyse how the results of the present research relate to the principal works in the literature, including the reassessment of the alternative theoretical approaches discussed in Chapter 2 (Section 2. 3. 2.). Afterwards, an evaluation will be made of the contribution of this dissertation to the state of the art in this area of management studies.

8. 3. 1. Linkages and the size of the corporate centre

To begin with, it is interesting to relate the empirical finding of the present research, which points out that the size of the corporate centre is associated with linkages to the views of some authors on linkages.

Authors have argued as follows. Linkages exist among divisions or functional departments (Kagono, 1992) resulting from the sharing of common customers and product development (Goold and Campbell, 1987). These linkages require co-ordination. In Japanese firms co-ordination is horizontal (Aoki, 1988; Kagono, 1992; Nonaka, 1990), but such structure requires a centralised approach to administration (Kono, 1984; Aoki, 1988).

In the present research it was found, however, that not all types of linkage are associated with the size of the corporate centre. In our sample, it was only the sharing of common customers and product development that showed positive association with the size of the corporate centre.

It was also found that the association between the size of the corporate centre and linkages becomes discernible only when the size of the firm becomes large (in the sample, over 5,000 employees)[4].

Thus, a blind down-sizing of staff would not help firms to improve their competitive position. In carrying out process re-engineering, it is advisable to examine what linkages would be affected, what kind of information flow would be brought about, and what capability would be needed to handle the new information structure. The size of the corporate centre should be considered in the above context.

8. 3. 2. Strategic management in Japanese firms

In the second place, the results of this research link up with Goold and Campbell's study (1987) of strategic management styles. These British management researchers found that these styles represent a

[4]It implies that the size of the corporate centre is related to the total employee number. In order to determine the relationship between the information flow and the centre's size, the level of the company size (measured in its total employee number) was controlled by the dummy variables as shown in Table 7. 19.

different balance of emphasis between the fundamental tensions existing in corporate management. These tensions are (i) clear responsibilities versus multiple perspectives; (ii) detailed planning versus entrepreneurial decisions; (iii) strong leadership versus business autonomy; (iv) long-term strategic versus short-term financial objectives; and (v) tight controls versus flexible pursuit of long-term objectives. To resolve these tensions the corporate centre uses two dimensions: planning and control influences. In the sample Japanese firms of the research, there was a negative association between these two influences. When planning influence was stronger, control influence was weaker in relative terms. This negative association reflects the way Japanese firms cope with the fundamental tensions that Goold and Campbell encountered.

The results of the present research in some way contrast with Goold and Campbell's finding. As shown in the results of the test of Hypothesis 1, the average values of all the sample Japanese firms were higher on planning influence than on control influence. These results diverge from Goold and Campbell's finding that strategic management styles depend on the nature of the businesses and the resources available in the corporation as a whole. The sample firms were all located in the high-planning and high-control Quadrant (See Figure 7. 2.), which means that their strategic management style, if classified on the basis of planning and control influences, was more or less similar, even though these sample firms belonged to different industries and probably had different resource availability.

The similarity of strategic management style among Japanese firms may be related to Bartlett and Ghoshal's view (1989) that Japanese firms tend to build their strategy primarily on manufacturing scale economies, to the detriment of the "conditional fit" between the key success factor in their industry and the strategic and organisational capability to achieve it. Does this mean that the manufacturing scale economies better accommodate the needs of information flow than do other strategies observed by Bartlett and Ghoshal among non-Japanese firms? Further study will be needed to address the question.

8. 3. 3. Information-processing and the corporate centre

In the third place, the results of the research concern information-processing and the corporate centre.

In this research empirical evidence was not found to support a relationship between the vertical information-processing needs and the size of the corporate centre, but the result should not be interpreted as showing that the centre's size has nothing to do with the need for and capabilities to process vertical information flow.

The result might rather indicate that other equally important factors such as environmental or organisational ones influence the centre's size. One possibility is that, even if firms do not have a large information flow, they might have large staff at their corporate centres for historical or competitive reasons. This might explain the overall

impression that the corporate centres of Japanese firms are usually large, regardless of industry. Further study comparing Japanese and Western firms will shed light on this question.

Another possibility is that, because the sample firms were relatively large companies listed in the stock market, they tend to be more homogeneous regarding the structure and size of the corporate centre. This bias may be corrected if, in further study, small as well as large firms are taken as samples.

8. 3. 4. Considerations of sociological explanations

In the fourth place, the results of the research lead us to reconsider the alternative theoretical explanations to contingency theory.

In Chapter 2 it was contended that contingency theory is open to criticism because of its conservative assessment of the possibilities of operating socially preferred forms of organisation without incurring significant economic costs because of such aspects of organisational behaviour as political process, social constraints and dysfunctional uses of bureaucracy.

One such criticism is that organisational design is not neutral over the distribution of power and status along hierarchy (Child, 1984). Some arrangements imply a greater concentration of power and status at the top than do others. This raises the question of which organisational arrangements are acceptable to management and other groups, and

suggests that unacceptable ones will be resisted and therefore inefficient. The power to influence and/or resist policies on organisational design is of central interest to this approach. It concerns the relative power of management, workers and specialist groups within business companies. The distribution of this power will shift largely according to conditions in labour and product markets, which determine the supply and demand for employment of the specific groups which have exclusive rights to carry out certain tasks and to control training and recruitment.

On his part, Parkinson (1958; 1980) attributed to dysfunctional uses of bureaucracy the rise of the proportion of indirect to direct employees within industry. Departments grow because managers prefer to multiply subordinates not rivals. In turn, more subordinates make more work for each other. This empire building is more easily achieved in areas away from direct production, since in production a growth in numbers would often be constrained by technology and by established controls on work load, stock levels, and manning. Drake and Mitchell (1977) maintain that power dimensions are important for understanding people's behaviours in the decision process.

Based on the results of this research, however, it may be possible to qualify the argument in favour of socially preferred forms of organisations, at least in the case of Japanese manufacturing companies. Three reasons are to be adduced below. Before proceeding to them, however, it should be emphasised (1) that the argument in favour of socially preferred forms of organisations has the virtue of

exposing the significance of individual actors in preserving and altering the status quo (Pennings, 1992), and (2) that, although the evidence of this research leads to an explanation in favour of contingency factor, such as information flows, the plausibility of the argument based on socially preferred forms could not be ruled out completely concerning the size of the Japanese corporate centres.

First, the size of the corporate centre in the sample Japanese firms is too large (9.1 per cent on the average) to be explained away only on the basis of political process, social constraints and dysfunctional uses of bureaucracy. (In terms of indirect cost such a large size should represent a significant weight and could be justified only if the value added of the centre compensates for it.)

It may be argued, however, that the cultural traits and traditional values of the Japanese society shape the mentality of Japanese managers in such a way that they prefer the large size of the centre.

If the relative size of the Japanese centres were not too deviant from the size of competing Western corporate centers, it could be accepted that the large size derived from cultural traits and traditional values does not run the risk of incurring significant economic costs.

However, Young's (1995) data on German and UK firms reveal that Japanese centres are 5 to 10 times as large as their German and UK counterparts).

Young's data must be qualified, since the comparison base is not uniform between Germany and UK, and Japan. However, such a large difference certainly begs more explanation than political process, social constraints and dysfunctional uses of bureaucracy.

Second, the business environment of the sample firms was found to be unstable, as mentioned in Section 7. 2. 2. In such an environment, how long and to what extent can a less effective but preferred form of organisation be sustained without incurring threats to the survival of the firm or to the incumbency of its leader? Child (1984) argues that there is scarce scope to maintain a preferred but inefficient form of organisation in a firm operating in competitive markets.

Third, the conditions under which management, or indeed any other powerful group, can sustain the organisational design it prefers constitute a contingent factor in themselves (Child, 1984).

8. 3. 5. Contribution of this research to management study

Finally, it is necessary to evaluate the contribution of this dissertation to the literature on strategic management. Its contribution may be divided into four parts.

First, although there is a growing concern about indirect costs among Japanese firms (*e.g.*, Hori, 1993), literature on the value added by indirect cost departments does not abound. Among these indirect

costs, this study focused on the corporate centre. The study is, therefore, one of the first to attempt to offer some explanation on the value added by indirect cost departments.

The second contribution of the present dissertation is of an empirical nature. Several authors reviewed in the literature — such as Aoki, Kagono, Kono, Nonaka —, have suggested that Japanese firms are characterised by horizontal information flow among divisions or functional departments, and that such horizontal information flow relates to the centralised administration, affecting the size of the corporate centre. However, no empirical study has been conducted to test such relationship. This research is the first to do so. At the same time, as Chapter 4 synthesises this relationship between horizontal information flow and the size of the corporate centre, this research helps to fill the gap in theoretical models.

The third contribution of the present dissertation consists in shedding some light on the strategic management style of Japanese firms on the basis of two dimensions — planning and control influences. Campbell *et al* (1990) broadly classified Japanese firms as pursuing a strategic planning style, namely, high on planning but low on control, according to Goold and Campbell's work (1987) on strategic management styles. The present research modifies Campbell *et al*'s classification in that it found that Japanese firms were high on planning influence but also high on control influence.

In the fourth place, through its focus on information flow this research helps to clarify the mechanism of strategy as an emerging process. It relates to the growing awareness in the strategic management literature that strategy formation is not necessarily a consciously controlled mental process, but rather an emergent process, which is a process of learning "up and across a hierarchy" accompanied by vertical and horizontal information flows (Mintzberg, 1990a, 1990b; Ansoff, 1991). The former line of thinking corresponds to *prescriptive* orientation of schools of strategic thought, the latter to *descriptive*.

Based on either the *prescriptive* or *descriptive* orientation, ten schools of strategic thought were identified by Mintzberg (1990a and 1990b). Three are *prescriptive*, treating strategy formation as a process of conceptual design, of formal planning, and of analytical positioning. Six other schools deal with specific aspects of the process in a descriptive way. The most representative of the *descriptive* orientations is the *learning school*, which treats strategy formation as an emergent process.

Only deliberate strategies based on explicit intentions are recognised in the *prescriptive* schools. However, Mintzberg (1990a) contends that strategy formation can be deliberate or emergent. Therefore, strategists cannot always rely on procedure and technique, nor can they always design strategic perspectives in some analytically sequential or personal visionary process. According to the *learning school*, strategies emerge as strategists, sometimes individually but more often collectively, come to know a context and their

organisation's capability of dealing with it. The role of leadership is not to preconceive deliberate strategies, but to manage the process of strategic learning.

Mintzberg (1990b) cites Pascale's (1988) story of Honda as a good example of emerging strategy. Honda performs strategic thinking in terms of "strategic accommodation," or "adaptive persistence," underlining its belief that corporate direction evolves from an incremental adjustment to unfolding events. Rarely does one leader (or a strategic planning group) produce a bold strategy that guides a firm unerringly. Far more frequently, the input is from below. It is in this ability of an organisation to move information and ideas from the bottom to the top and back again in continuous dialogue that the Japanese excel (Pascale, 1988). Kagono *et al*'s (1985) findings also subscribe to this view and emphasise Japanese firms' inductive and incremental reasoning approach to strategy based upon intense information flow[5].

[5]Loveridge (1982) relates the decision-making modes or strategy schools to manpower planning, and contends that in the emerging school manpower plans may have tactical value in preparing for and concluding negotiated agreements for future changes in occupational structures.

8. 4. Implications and Prescriptions for Corporate Management

This section analyses the practical implications which the three conclusions in Section 8. 3 suggest for corporate management, and formulates, in accordance with these implications, a series of prescriptions for practising managers.

8. 4. 1. Implications for structural change

One of the implications of the research results is that, in evaluating the organisational structure, the right size of the corporate centre should not be determined in isolation. It must be decided in consideration of its relationship with the horizontal information processing needs which are derived from linkages, diversification, and the number of corporate and divisional functions. It should be borne in mind that the significance of the centre's influence on decisions is much more than its basic cost (Goold, Campbell and Alexander, 1994).

If linkages among divisions or functional departments are large, some "slack" human resources should be provided for so that the size of the corporate centre can adjust itself to information processing needs.

In the same way, diversification and the number of corporate and divisional functions ought to be taken into account in determining the size of the corporate centre.

To determine the size of the corporate centre, a methodology for measuring the information-processing needs should be developed. The present research will provide some clues to devise the methodology.

This implication relates to the following two prescriptions.

Prescription for process re-engineering

The findings of the research concerning linkages enable us to gain an insight into what is called process re-engineering (Hammer, 1990; 1993) or process innovation (Davenport, 1993). Process is a structured, measured set of activities designed to produce a specified output for a particular customer or market. In process re-engineering, business is viewed in terms of key processes rather in terms of functions, divisions, or products. Co-ordination and management of functional interdependency are achieved. Through process re-engineering, firms seek to achieve major reductions in process cost or time, or major improvements in quality.

The adoption of process re-engineering implies an absolute reduction of staff, especially at the corporate centre (Hammer, 1990; 1993). However, process re-engineering actually brings about an increase in the horizontal information flow, which, as the present research has found, may lead to a new increase in the central staff, if the structure resulting from process re-engineering is to fit in with the new information-processing needs.

Likewise, such re-engineering requires strong direction from senior management, because only those in positions overlooking multiple functions can see opportunities for innovation. Therefore, in process re-engineering the number of functions at the corporate centre might increase. This might imply a need to increase its size, if the structure resulting from process re-engineering is to be accommodated to the new situation.

Prescription for lean management

The conclusions of the research suggest that firms may run a risk, if, in an effort to cut overheads, they make an indiscriminate reduction in the size of the corporate centre without prior in-depth assessment of its role. The research highlighted the fact that there was some association between the size of the corporate centre and the way it managed the firm. Linkages, diversification, and the numbers of corporate and divisional functions were discussed, tested and found to be related to the size of the corporate centre.

Therefore, an indiscriminate reduction in the size of the corporate centre might impair its capability to cope with the horizontal information flow arising from linkages, diversification, and the numbers of corporate and divisional functions. Changes in organisational design bring about changes in decision-making, information flow, and management style (Cooper, 1990). Therefore, such a reduction could

even jeopardise the competitive edge which results from the firm's information processing capability.

That down-sized firms lose their competitive edge in innovation due to the lack of horizontal information flow among different business units was researched by Dougherty and Bowman (1995). (It may not be wide of the mark to contend that down-sizing more often than not affects indirect staff units, such as the corporate centre.)

Dougherty and Bowman (1995) divide the business of innovation into three distinct activities. First, a firm must develop and perfect a design. Second, to turn a product into a commercial reality, the company must co-ordinate the work of various departments such as R&D and engineering. Finally, the firm must undertake what the study call "strategic linking" derived from horizontal information flow. If it is to succeed, a new product must become part of a firm's corporate strategy, fit into its organisational structure, and successfully compete for resources, such as cash and people.

Down-sized firms were no better or worse than their unshrinking counterpart at the first two phases of product development. But they were far worse at strategic linking. Down-sizing seems to interfere with the web of informal relationships that innovators use to win support and resources for new products, and which helps mesh innovative activities with those of the firm as a whole (Reichheld, 1996). Dougherty and Bowman (1995) argue that down-sized companies tend to lack such "entrepreneurial networking".

These findings help to explain why some companies perform well in the immediate wake of a down-sizing, but then run into difficulties later.

8. 4. 2. Implications for the interpretation of Japanese management

Following the arguments mentioned in Section 1. 3., and developed in Section 4. 6., the results of this research may contribute two insights into Japanese management: the internationalisation of Japanese firms and the transfer of Japanese lean production systems.

Prescription for internationalisation

Concerning its internationalisation process, the results suggest that Japanese firms will need Japanese managers in certain key positions of their overseas units for the handling of information flow with the head office. The reason is that a common background fostered by the ranking hierarchy and contextual skills is essential for the information-processing structure of Japanese firms. Thus, it will be difficult to replace Japanese managers with local ones in this.

Kao is a case in point. The Economist (1996a) reports that Kao has failed to incorporate its new foreign employees into the formal network that works so well for its Japanese ones. Despite its democratic pretensions, there are no foreigners on Kao's board even though half of

its employees now work abroad. Most of Kao's ideas still come from its Japanese staff.

Another case is New United Motors Manufacturing (NUMMI), a joint venture between General Motors and Toyota that began operation in Fremont, California in 1984. To establish a close co-ordination of information flow between the new joint venture and the corporate centre in Japan, Toyota needed to send a core staff of between 30 and 35 managers and production co-ordinators to staff the venture (Adler, 1992). They stayed on for three to five years. The size of the Japanese expatriate core staff is large, when compared with NUMMI's total salaried employees who numbered 100.

Prescription for the transfer of Japanese lean production system

For the implementation abroad of lean production management, they suggest that the priority should be given to those aspects of production technology which do not hinge on contextual skills. They include, for example, the layout of equipment, *e.g.*, U-cells, the creation of production flow, smoothing of production, etc. The appropriateness of such priority is evidenced by the experience of Price Waterhouse, which has successfully helped to implement lean production management in Spain and UK.

After all, the internationalisation of firms is neither a simple matter of transferring managerial technologies to foreign subsidiaries, and thereby transforming "backward" economies, nor a case of firms

adapting their practices to those dominant in each host country; it is rather a complex and variegated set of relationships between economies, institutions and firms (Whitley, 1992).

Last, planning and control influences are used for the close supervision of lower management by the corporate centre. In this context, control influence is used not to provide incentives to individual employees but rather to set objectives and to monitor closely the performance of divisions or functional departments. This implies that too much emphasis on individual incentives in place of the current more "egalitarian" handling of individuals' remuneration may impair the balance which exists between planning and control influences.

8. 5. Limitations of the Present Research

After pointing out in the preceding section the main contributions of the present research to the literature, it is proper to recognise its limitations. In the first place, the research focused on the corporate centre, and, therefore, did not take into account the perceptions of "line" managers in divisions or functional departments. All responses were filled in by staff departments such as corporate planning, general affairs, personnel, president's office, and public relations. Accordingly, even though they may have tried to be as objective as possible in their perceptions concerning the questionnaire items, it is impossible to be sure that bias in the responses was minimum. This is a limitation

inherent in the design of the research. Unfortunately, time constraint and the work involved in contrasting views between the corporate centre, and divisions and functional departments, made such contrasting of views impracticable.

The second limitation of the research, in a way similar to the first, consists in having conducted the survey from the viewpoint of the head office in Japan, and not from the perspective of the firms as a whole, namely, the head office in Japan and overseas operations in cases where there is an international office network. In a world increasingly integrated, a survey involving the entire office network would have enabled us to appreciate the role of the corporate centre in a broader context. It is comforting to know that studies on multinational firms by other authors (Schollhammer, 1971; Ghoshal, 1986) found that the perceptions of the managers at the head office and in subsidiaries were usually quite consistent; that the difference among them was minimal.

The third limitation relates to the fact that the present research was confined to Japanese firms. Hypotheses 2 and 3 relating the size of the corporate centre to planning and control influences were rejected in the present research. On the other hand, Young (1993) reported that British firms adopting Strategic Planning style, namely, firms with high planning influence and low control influence, had a larger corporate centre than financial control firms, namely, firms with low planning influence and high control influence. Further comparative study between Japanese and Western firms may cast clarifying light on this discrepancy between Young's study and the present research.

8. 6. Suggestions for Future Research

In the light of the limitations of the present research described in the foregoing section, it is possible to make some suggestions for future studies on the subject.

It is desirable that all those questions which involve the perceptions of respondents include the responses not only of the representatives of the corporate centre but also of line managers. Despite the fact that the perceptions of the two groups of respondents are usually coincident, it is advisable to avoid possible bias in responses. The inclusion of responses from line managers may enable us to discover some interesting aspects which might not be noticed in the data gathered from the managers at the corporate centre.

Second, a more ambitious study than the present one should include the relationships between the head office of Japanese MNCs (multinational corporations) and their subsidiaries and offices in the world. As highlighted by Hedlund (1993), Gupta and Govindarajan (1991) and others, MNCs increasingly confront the need for leveraging the resources and capabilities not just of head offices, but also of their national subsidiaries on a world basis. Japanese firms are no exception. Therefore, in a world in which Japanese firms are increasingly becoming global competitors, such a study will allow us to

gather more complete information on the functioning of the Japanese corporate centre in a wider context.

Finally, similar research should be conducted comparing Japanese and Western firms, which will help us to view the characteristics of the Japanese corporate centre "in the round" in the aspects addressed in the present research — namely, the relationship of the size of the corporate centre with the horizontal as well as the vertical information flow.

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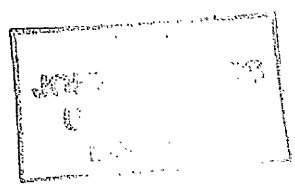

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Annex 1a:

Covering Letter for the Questionnaire

Manchester, 23rd November, 1993

Dear Sirs,

We at the Manchester Business School belonging to the University of Manchester are conducting a survey about the corporate centre.

The objective of the survey is to learn about the role of the corporate centre and its relationship with management style in Japanese firms. We would be grateful if you could fill in the enclosed questionnaire.

All responses will be treated as strictly confidential. The analysis of the responses will be presented in the aggregate and in a codified form. As a consequence, it will be impossible to identify individual responses.

If possible, please return this questionnaire with:

(1) a copy of organisational chart showing basic structure of your firm, and

(2) a copy of the most recent annual report.

Thank you in advance for your co-operation.

Yours faithfully

Kimio Kase
Doctoral Programme
Manchester Business School

Annex 1b:

Covering Letter for the Questionnaire (Japanese)

１９９３年１１月２３日

前略

現在、マンチェスター大学経営大学院であるマンチェスター・ビジネス・スクールでは企業の本部組織（つまり、本社ジェネラル・スタッフ部門または本社管理部門）についての調査を行っています。

調査の目的は、日本企業において、本部組織の役割と、企業の経営スタイルとがいかに関連しているかを調べることにあります。質問調査票を同封いたしますので、ご回答願えれば幸いです。

いただいたご回答はコンフィデンシャルな情報として扱われることは勿論、いただいたご回答のデータの分析は、個々の企業のデーターとしてではなく、産業別、規模別などによる傾向を示すデーターとしてコード化して行われます。したがい、個々の回答企業の名前は、分からないようになっております。

ご回答をいただく際、下記の資料もご送付いただければ幸甚です。

（１）　貴社の組織図
（２）　一番最近の財務諸表

よろしくお願いいたします。

草々

マンチェスター大学経営大学院博士課程
（マンチェスター・ビジネス・スクール）

加瀬公夫

Annex 2a:

Questionnaire

Company name:
Respondent's name: Title:
Name of contact for queries (if different from above): Telephone number: Fax number:

1 General Information

(1) which of the following most closely describes the nature of your company's business? (*Multiple answers are allowed*)

Please circle all significant activities (more than 25 percent of turnover or assets). If there are other such activities, please complete section (i).

a	Foods and beverages	e	Communications and electronics
b	Chemicals and petroleum products	f	Shipbuilding and rolling stock
c	Metal products	g	Motor vehicles
d	Machinery and parts	h	Miscellaneous manufacturing
		i	Others: please state

(2) Please inform the following data

Turnover in last financial year	
Total number of full-time employees	
Total expenditure on corporate functions and management (if available)	

2 Environment Factors

(1) How stable is the environment surrounding your firm (in consideration, for example, of the market competitiveness, frequency of new products, entrance barrier, etc.)? Please circle the number which best represent the situation at your firm.

extremely stable 1	2	3	midpoint 4	5	6	extremely unstable 7

(2) How diversified is your firm? (Please consider it not diversified, if related products or product lines sharing the same common market or technology represent over 95% of the total turnover.) Please circle the number which best represent the situation at your firm.

extremely diversified 1	2	3	midpoint 4	5	6	not diversified at all 7

(3) What degree of routineness have the production technologies of your firm.? Please consider them to be less routine, if custom technology is the principal production technology; highly routine, if continuous process technology (*eg*, petroleum refinery) is the principal production technology. Please circle the number which best represent the situation at your firm.

extremely high routineness 1	2	3	midpoint 4	5	6	extremely low routineness 7

3 Organisational Structure and Systems

(1) Is your firm's organisation divided into autonomous business units on geographic and/or product bases (*ie*, geographic divisions, product divisions, etc)?

1 YES—Please answer question (2) and (3) below.
2 No —Please proceed to question 4

(2) What kinds of function are performed by typical divisions? Please circle the numbers of functions that are performed by these business units or divisions. (*multiple answers are allowed*)

1 production
2 sales
3 marketing planning
4 personnel
5 control
6 finance
7 basic research
8 applied research and development
9 purchasing

(3) How many divisions are identified in your firm? Please restrict your calculation to division that have some degree of autonomy in operating decisions. Please circle the appropriate number.

1 2 - 5 divisions
2 6 - 10 divisions
3 11 - 20 divisions
4 21 - 30 divisions
5 more than 30 divisions

4 Corporate Centre (General staff and headquarters administrative departments)

(1) To what extent is the corporate centre[1] of the firm involved in the decisions and strategies of the divisions or functional departments[2]? Please circle the number which best represents the situation at your firm.

extremely involved			midpoint			no involve-ment at all
1	2	3	4	5	6	7

(2) To what extent does the corporate centre provide a strategy and direction as guidance for the divisions or functional departments? Please circle the number which best represents the situation at your firm.

a very great deal of strategy and direction			midpoint			no strategy and direction at all
1	2	3	4	5	6	7

(3) How important is formal strategic planning system for the relationships between the corporate centre, and divisions or functional departments? Please circle the number which best represent the situation at your firm.

extremely important			midpoint			not important in the least
1	2	3	4	5	6	7

(4) Are major investment ideas that affect the division or functional departments initiated by corporate centre level?

1 YES—Please answer the next question.
2 No —Please proceed to question (5).

Please circle the number which best represent the situation at your firm.

100% of cases	over 75% but less than 100% of cases	over 50% but less than 75% of cases	over 25% but less than 50% of cases	over 0% but less than 25%
1	2	3	4	5

[1] General staff and headquarters administrative departments
[2] For example, production department, sales department, etc.

(5) How important are strategy criteria in corporate centre's approval of large capital requests? Please circle the number which best represent the situation at your firm.

extremely important			midpoint			not important in the least
1	2	3	4	5	6	7

(6) How much importance do financial returns have in corporate centre's approval of large capital requests? Please circle the number which best represent the situation at your firm.

a very great deal of impor-tance			Midpoint			no impor-tance at all
1	2	3	4	5	6	7

(7) How important are non-financial and strategic objectives set by the corporate centre for the division or functional departments at the beginning of each year? Please circle the number which best represent the situation at your firm.

extremely important			midpoint			not important in the least
1	2	3	4	5	6	7

(8) How much importance is placed on financial targets as opposed to strategic objectives in performance reviews of division or functional department managers? Please circle the number which best represent the situation at your firm.

a very great deal of impor-tance			midpoint			no impor-tance at all
1	2	3	4	5	6	7

(9) How important are financial targets agreed between divisions/functional departments and corporate centre for division or department head? Please circle the number which best represent the situation at your firm.

extremely important			cannot say one way or the other			not important in the least
1	2	3	4	5	6	7

(10) Do financial targets agreed between divisions/functional departments and corporate centre amount to a promise by division/functional departments that has to be met? Please circle the number which best represent the situation at your firm.

definitely true			cannot say one way or the other			definitely incorrect
1	2	3	4	5	6	7

(11) How intensely is the division's or functional department's financial performance monitored by the corporate centre during the year? Please circle the number which best represent the situation at your firm.

extremely intensely monitored			cannot say one way or the other			not monitored in the least
1	2	3	4	5	6	7

(12) What happens to a division/functional department manager who fails to achieve his or her annual financial target? Is the division/functional department manager in severe danger of jeopardising his career? Please circle the number which best represent the situation at your firm.

definitely true			cannot say one way or the other			definitely incorrect
1	2	3	4	5	6	7

5 Linkages: Please circle the number which best represents the situation at your firm.

(1) How important are common customers for divisions/functional departments? Please circle the number which best represent the situation at your firm.

extremely important			midpoint			not important in the least
1	2	3	4	5	6	7

(2) How important is the purchase of products from each other have for divisions/functional departments? Please circle the number which best represent the situation at your firm.

extremely important			midpoint			not important in the least
1	2	3	4	5	6	7

(3) Do divisions/functional departments have a common production technology? Please circle the number which best represent the situation at your firm.

definitely true			cannot say one way or the other			definitely incorrect
1	2	3	4	5	6	7

(4) Do divisions/functional departments share an essential marketing skill? Please circle the number which best represent the situation at your firm.

definitely true			cannot say one way or the other			definitely incorrect
1	2	3	4	5	6	7

(5) Do divisions/functional departments share an essential product development skill? If neither extreme represents your judgement, circle an appropriate number in between, considering the distance for the description at both extremes, and, if any, at midpoint 3.

definitely true			cannot say one way or the other			definitely incorrect
1	2	3	4	5	6	7

6 **Scope and Manning of the Corporate Centre**: Please inform the number of the corporate staff. Please also circle the number of Please circle the number if corporate function. If so, please inform the number of the corporate staff.

Total Number of Corporate Personnel: Please state.

Please circle the number, if corporate function.

1	Finance, Accounting	10	Research and Development
2	Secretarial and Legal	11	Engineering Services
3	Personnel, Human Resources	12	Production, Manufacturing, Physical Distribution Services
4	Government, Public Relations	13	Purchasing
5	Strategic/Business Planning	14	Property Services
6	Marketing/Commercial Services	15	Administrative Services
7	Internal Audit	16	Other Services: Please state.
8	Information Systems		
9	Management Services		

Annex 2b:

Questionnaire (Japanese)

日本的経営における本部組織について

貴社名：
記入者御氏名： 役職：
電話番号： ファックス番号： ご回答に関する質問問合先（上記と異なる場合のみご記入ください）：

1　　貴社に関する一般的データ

（1）　以下の記述のうち、どれが貴社の業種に該当しますか。該当すると思われるもので、売上または資産の２５％を代表する業種全てに○印を付けてください。（いくつでも）

a	食品、飲料	e	通信、電子機器
b	化学、石油製品	f	造船、車両
c	金属	g	自動車、運搬機器
d	機械	h	その他製造業
		i	その他。枠の中にご記述ください。

（2）　以下のデータについてご記入ください。

一番最近の事業年度における売上高	（　　年度）
正規従業員総数	
一般管理費	

2　　環境要因

（1）　貴社の事業環境はどの程度安定的ですか（例えば、市場の競争性、新製品の頻度、参入障壁度など）。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください。

きわめて安定的である 1	2	3	どちらともいえない 4	5	6	きわめて不安定である 7

（2） 貴社の経営はどの程度多角化されていますか。（市場、技術等を共有する関連製品の売上構成に占める割合が９５%以上であれば多角化されていないとして）両極に示した記述を参考にしながら貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください。

きわめて多角化の度合が高い			中程度			まったく多角化されていない
1	2	3	4	5	6	7

（3） もし個別受注生産の割合が高ければ生産のルーティン度が低い、反対に連続的な装置生産（例えば石油精製）の割合が高ければ生産のルーティン度が高いとして、両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください。

きわめてルーティン度が高い			中程度			きわめてルーティン度が低い
1	2	3	4	5	6	7

3 組織構造およびシステム

（1） 貴社の組織は製品別あるいは地域別等の基準にもとづき、事業ユニット（たとえば製品事業部、地域事業部）に細分されていますか。

1 はい ―下の問（2）～（3）にお答えください。
2 いいえ ―問4にお進みください。

（2） 事業部はどのような職能をもっていますか。以下の職能のうち、事業部によって遂行されている職能に○印をご記入ください。（いくつでも）

1 生産
2 販売
3 マーケティング企画
4 人事
5 会計・コントロール
6 財務
7 基礎研究
8 応用研究と開発
9 購買

（3） どの程度の数の事業部に分けられていますか。業務運営上の決定に関して自立性をもっている事業部の数をお答えください。

1　2～5
2　6～10
3　11～20
4　21～30
5　30以上

4　本部組織（一般に本社ジェネラル・スタッフ部門、本社管理部門と呼ばれるもの）

（1） 本部組織[注1]は事業部または職能部門[注2]の決定および戦略にどの程度関与していますか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください。

きわめて多くの関与			どちらともいえない			まったく関与しない
1	2	3	4	5	6	7

（2） 本部組織は事業部または職能部門に対してどの程度の戦略および方向づけを与えていますか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください。

きわめて多く与えている			どちらともいえない			まったく与えない
1	2	3	4	5	6	7

（3） 公式的な戦略計画システム（例えば、長期事業計画）は、本部組織と事業部または職能部門との関係においてどの程度の重要性をもっていますか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください。

きわめて多くの重要性をもつ			どちらともいえない			まったく重要性をもたない
1	2	3	4	5	6	7

[注1] 一般に本社ジェネラル・スタッフ、本社監理部門と呼ばれるもの。
[注2] 例えば、生産部、販売部など。

（4） 事業部または職能部門に影響をあたえる重要な投資案件は本部組織により提案されますか。

1　はい　一下の問にお答えください。
2　いいえ　一問（5）にお進みください。

貴社の現状にもっとも妥当すると思われる数字に○印を記入してお答えください。

すべて(１００％とも)本部提案	７５％以上１００％未満が本部提案	５０％以上７５％未満が本部提案	２５％以上５０％未満が本部提案	０％以上２５％未満が本部提案
1	2	3	4	5

（5） 多額の投資案に対する本部組織の承認において、戦略的な判断基準は、どの程度の重要性をもっていますか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください。

きわめて多くの重要性をもつ			どちらともいえない			まったく重要性をもたない
1	2	3	4	5	6	7

（6） 多額の投資案に対する本部組織の承認において、財務的収益率（例えば、ＲＯＩ、ＲＯＡ、ＲＯＥ、ＲＯＳ）はどの程度の重要性をもっていますか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください。

きわめて多くの重要性をもつ			どちらともいえない			まったく重要性をもたない
1	2	3	4	5	6	7

（7） 毎年度年初に本部組織により事業部または職能部門に与えられる、財務的な数字以外の、戦略的な目標はどの程度の重要性をもっていますか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください。

きわめて多くの重要性をもつ			どちらともいえない			まったく重要性をもたない
1	2	3	4	5	6	7

（8） 事業部または職能部門責任者の人事考課において、財務的目標達成度は、どの程度の重要性をもっていますか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください。

きわめて多くの重要性をもつ			どちらともいえない			まったく重要性をもたない
1	2	3	4	5	6	7

（9） 事業部または職能部門と本部組織との間で合意された財務的数字は、事業部または職能部門責任者にとり、どの程度の重要性をもっていますか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください。

きわめて多くの重要性をもつ			どちらともいえない			まったく重要性をもたない
1	2	3	4	5	6	7

（10）事業部または職能部門と本部組織との間で合意された財務的数字目標は事業部または職能部門により、守らなければならない約束とみなされますか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください。

まったくそのとおり			どちらともいえない			まったくちがう
1	2	3	4	5	6	7

（11）事業部または職能部門の業績の本部組織による監督は、どの程度綿密にされますか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印を記入してお答えください。

きわめて綿密に業績監督される			中程度			まったく業績監督されない
1	2	3	4	5	6	7

（12）事業部または職能部門が年度予算を達成しない場合、部門責任者の交代が行われますか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください。

まったくそのとおり			どちらともいえない			まったくちがう
1	2	3	4	5	6	7

5 部門または事業部間のつながり：両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください。

（1） 部門または事業部間で多くの顧客を共有していますか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください

きわめて多く共有			中程度			まったく共有しない
1	2	3	4	5	6	7

（2） 部門または事業部間での製品または部品の相互取り引きの程度はどれくらいですか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください

きわめて多くの相互取り引きを行っている			中程度			まったく相互取り引きを行っていない
1	2	3	4	5	6	7

（3） 部門または事業部間で、どの程度、生産技術を共有していますか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください

きわめて多く共有			中程度			まったく共有しない
1	2	3	4	5	6	7

（4） 部門または事業部間で、基本的なマーケティング・スキルを共有していますか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください

きわめて多く共有			中程度			まったく共有しない
1	2	3	4	5	6	7

（5） 部門または事業部間で、基礎的製品開発能力を共有していますか。両極に示した記述を参考にしながら、貴社の現状にもっとも妥当すると思われる数字に○印をご記入ください

きわめて多く共有			中程度			まったく共有しない
1	2	3	4	5	6	7

6 本部組織（本社スタッフ部門）の役割および人員構成：

本部組織人員総数：枠の中にご記入ください。

次に述べる職能が本部組織に属する場合には、○印をつけてください。

1	財務・経理	10	マネジメント・サービス（企業内コンサルタント等）
2	総務・法務	11	研究開発
3	人事／ヒューマンリソース	12	エンジニアリング・サービス
4	渉外	13	製造、生産、流通サービス
5	広報	14	購買
6	戦略計画	15	不動産関連サービス（資産管理、不動産の法的管理、等）
7	マーケティング／販売関連サービス	16	事務サービス（電話、郵便、食堂、医療、等）
8	内部監査		
9	情報システム	17	その他サービス：枠のなかにご記入ください。
