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**SCANNING THE ENVIRONMENT FOR BUSINESS
INFORMATION IN SELECTED MALAYSIAN INSTITUTIONS**

By

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A thesis submitted for the degree Doctor of Philosophy to the
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ABSTRACT

**SCANNING THE ENVIRONMENT FOR BUSINESS INFORMATION
IN SELECTED MALAYSIAN INSTITUTIONS**

by

Manuel Melvyn Yunggar

Supervisor : Professor James M Livingstone

ABSTRACT

This thesis addresses two broad questions :

1. What environmental, organisational and individual attributes affect the way managers scan their business environment?
2. How might a firm organise their environmental scanning function?

The primary data base for this thesis consist of (1). a questionnaire survey covering one hundred and eleven managers from sixteen of the largest Malaysian business institutions, (2). interviews with thirty-six managers in three of those institutions, and (3). on-site observation of the scanning department in two of them.

Even though the data is limited to Malaysian firms, comparison of the results with those of previous research on scanning in U. S. corporations suggests that the scanning behaviour of the sampled managers and, indeed, the overall nature of their managerial functions, closely resembled those of managers in American corporations. (During the course of the study, the writer looked for a European or British study on scanning, without too much success however, the model adopted for the analysis is of

(ii)

an European origin, namely the Joreskog and Sorbom model). Accordingly, it is proposed that the findings of the thesis are not limited to Malaysia but may be **generalisable** across a wider population of managers in business organisations.

The results show that individual level scanning is influenced by the managers' perceptions about the characteristics of the environment and about the strategic orientation of the firm as well as by personal attributes such as their entrepreneurial orientation and experience with diversity. These factors affect the importance assigned by them to the scanning function, the amount of time they devote to the task and also the foci of their scanning attention.

At the organisational level, it is observed that a firm's scanning system consists of two separate and distinct (but interacting) components : a strategic scanning system that focuses on long term effectiveness and adaptation and an operational scanning system that is closely related to the current task environment and to the objectives of achieving short and medium term efficiency. These two systems need different forms of organising and, in particular, require different kinds of involvements on the part of regular line managers and "expert" scanning staff.

Based on this findings, a conceptual model of the organisational learning and adaptation process is proposed. Scanning is related to this model through the concept of information value-added. Organisations are seen as systems for adding value to organisation through the process of recognition, circulation, synthesis, and hypothesis formation. The roles of different components of the organisation with regard to each of these processes are reviewed and some prescriptive suggestions are made about how managers can enhance the scanning capability and effectiveness of a firm.

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Declaration

This thesis is original work of the author, except otherwise stated

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DEDICATION

To Ker Mui Mui who taught me the value
of struggle, frugality and perseverance, that every cloud there is a silver lining.

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To my Kadazan way of thinking, gratitude, is a very personal thing. Superlative adjectives in cold type are singularly inappropriate in acknowledging the enormous help and support that I have received from a number of persons that, in one way or the other, have contributed towards my progress throughout the long and lonely years I spent completing the PhD programme. Both they and I are aware of those debts. Attempting to pay them off through a game of wordsmithing in this page is a sacrilege that I shall avoid. I will only mention their names here and not the feelings of gratitude, for the feelings are cherished private memories and must remain that way.

The names, in perfectly random order, are : James M Livingstone, Helena Kahilin Tulas, Yusof Haji Mohd Kassim, Kpt. Dr. Adlina Suleiman, Ismail Abbas, Apal Humphrey Sakandar, Bukil Gulasag Loo, Albert Majilang, Ker Mui Mui, Luiz Moutinho, Ignatia Valentina Olim, Abbas S Abid, Hussein Al'araj, Joannes Tasim Gaduon, Samir Abusnaiz, and the late Donne Sagun. *Tambalut* Donne's untimely death in March 1989 is a blow to many of his close friends. His inspiration and guidance are sorely missed.

Chapter One
Introduction and overVIEW

CHAPTER ONE

INTRODUCTION AND OVERVIEW

This thesis is concerned to investigate two processes:

- (1). How individual managers scan the environment and accordingly investigate the effects of different environmental, organisational and personal attributes on the various aspects of managerial scanning behaviour, such as the kinds of information acquired, the sources used, and the preferred mode and focus of scanning.

- (2). How a firm might organise its scanning system, to identify the advantages and disadvantages of formalising the scanning mechanism, and to explore how and to what extent the acquired information is actually used in organisational decision making.

Environmental scanning has been defined by one authority as "the managerial activity of learning about events and trends in the organization's environment" (Collings 1968), and at the same time extracting, shifting out, and pinpointing crucially useful information therefrom in its process of adapting to its surrounding. Pang (1989), translates scanning in operational term for the State of Sabah (an East Malaysian state) as ". . . a stock-taking exercise . . . this amounts basically to identifying the strengths and weaknesses (endogenous to the State) as well as opportunities and threats (exogenous to the State) to the system in question". Environmental scanning as viewed in this thesis, is the organisational activity of getting external information - the collective and individual executive's action, a definition which raises the basic questions of what is the appropriate unit and level of analysis for a study on scanning.

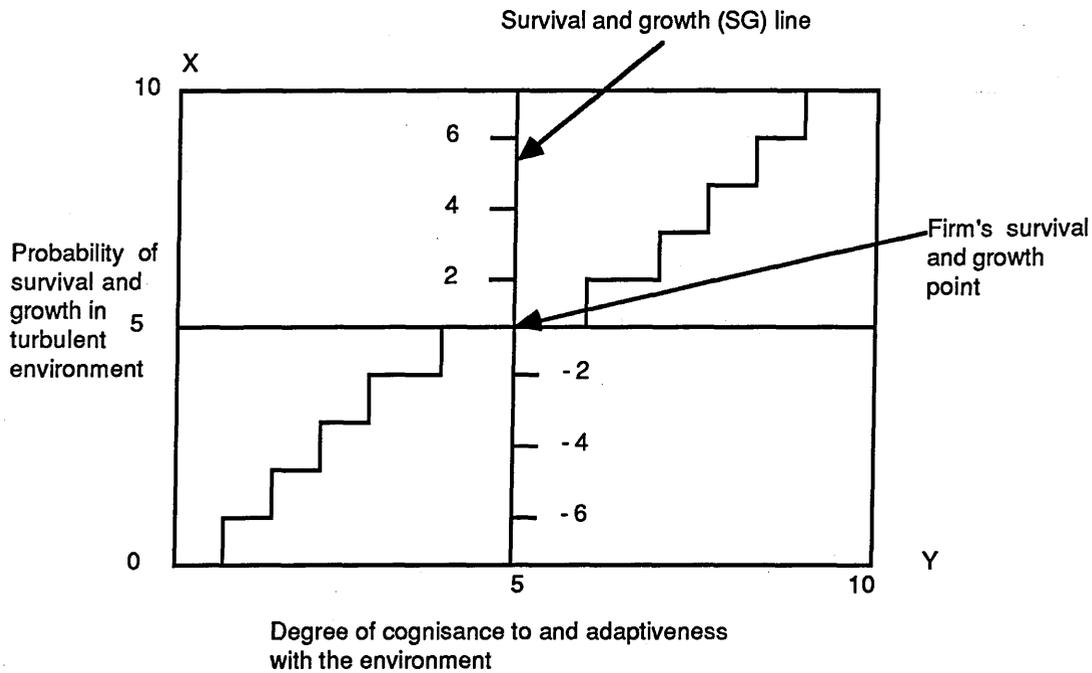
In the Association of South East Asian Nations (ASEAN) region, and in Malaysia specifically, the move towards modernisation and competitiveness is accelerating fast,

bringing in its wake rapid technological, economical, social, political and other changes. Young *et al* (1988) observe that indeed changes ". . . in (the) international business patterns are closely aligned to changes in world economic and political conditions and the national and international fiscal, monetary, trade and legal environments". Obviously if an organisation does not take the initiative to be cognisant of and be adaptive to the changes, or in the words of Young "this complex intermeshing", the organisation will, at worst, move ultimately to its demise, or at best be just barely able to breakeven, very much at the mercy of a turbulent environment (Snyder 1981). On the other hand, it may attempt to modify the environment to accommodate its wishes, but such an option is a highly unlikely and difficult strategic move in a very competitive environment.

Figure 1:1, illustrate the proposition that the higher the degree of 'cognisance and adaptiveness' the better chances of the firm's survival and growth, over a long period of time.

When the degree is at median *i.e.* $X = 5$ or $SG = 0$, *ceteris paribus*, the chances are that the firm may only be able to break even, proceeding in time, either towards $X < 5$, in which event the firm has negative growth (declining), *i.e.* if the degree of cognisance and adaptiveness (Y) moves below 5, or $X > 5$, in which event the firm has a positive growth, *i.e.* if $Y > 5$. ($[X = 5] = [SG = 0]$).

Figure 1:1 - Firm's awareness of the environment



Note :

The shape of discrete steps (they could be in any forms or shapes) do not represent any particular connotation/meaning except that they are intended to convey stages or periods wherein the condition of the firm plateaus at a certain point of time (e. g., its industrial position or ranking in a particular business locality or area). The dynamic environment then causes the position or ranking of the firm to go up or down the SG line depending on the firm's degree of cognisance and adaptiveness to the environment, good strategic formulation and implementation, et cetera.

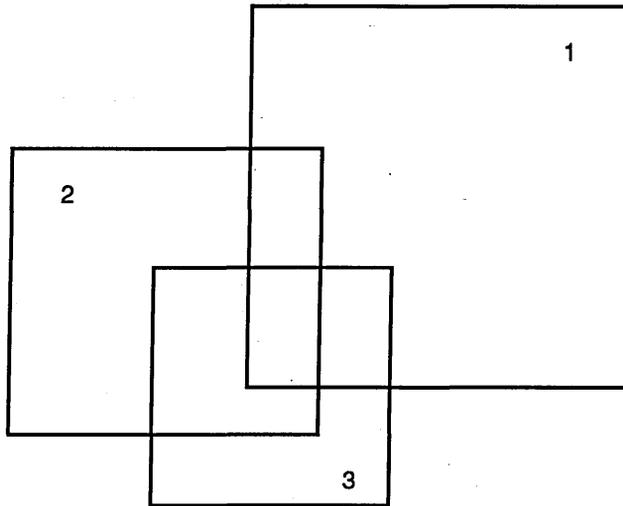
Scanning has been defined as a commencing step or the "mechanism that initiates" the organisation in its dynamic on going process of adapting to its surrounding by generating an up-to-date database of information, alerting management to what is happening by disseminating important information and analyses to key strategic decision-makers and influencers (Brownlie, 1989 p21). Young (1987) commenting on the speed of internationalisation of Japanese firms, the speed is ". . .related to experience domestically . . . that joint ventures with foreign partners in Japan itself

permitted the Japanese enterprises to learn how to manage multinational enterprises". Its importance is well recognised, ". . .the successful entrepreneur minimises risk by increasing his store of information. He indulges in intensive process of information gathering from consultants, business friends, sources of finance, market gurus, people in the know or people who know people in the know. The quality of his information sources and channels is critical to success." (Sweeny, 1989, p2), (see also, for example, Pfeffer and Salancik, 1978; Abdul Rahman, 1988, and a number of others who have devoted their attention, at least temporarily on this scanning issue).

Environmental scanning, however, is a complex and multi-faceted phenomenon. There is almost an unlimited amount of information out there that an executive wants to acquire. Often, however, he or she may not be very certain which information is crucially needed for a given tactical and/or strategic purposes. Moreover, not all of potentially relevant information is easily obtainable or available at all time. Aguilar (1981) provides an interesting framework for visualising the problem of an individual manager with regard to information needs (Figure 1:2). A manager receives a vast amount of information, on a continuous basis. Box 1 represents the information a manager receives. Box 2 represents information that the manager wants.

Obviously, he does not receive all information that he wants and also receives information that he does not want. Box 3 represents the information that he needs, but all of which he does not necessarily receive. He does not even want all the information he needs, because he does not perceive the need. There can also be information he receives, needs but does not want. Figure 1:2 depicts this phenomenon.

Figure 1:2 - Information wants, needs and availability



- Box 1 : Information a manager receives
- Box 2 : Information a manager wants
- Box 3 : Information a manager needs

Adapted from Aguilar (1981)

This diagram provides an interesting insight. It shows the deficiencies of an information system designed only on the basis of what a manager wants without a rational analysis of what information he really needs. The empirical part of this thesis will be concerned largely with the methods and systems for collection of information. Such a system will normally be biased by what information the managers want and may not represent the actual information needs.

Again, there is a semantic question about the term "information". What may be "information" to some people may not be so to others, for there is a variety of apparently appropriate statements, but none is a universally valid description or

definition. The reason, according to Otten (1974) is that those various definitions reflect subjective and context-dependent concepts of information and are very vulnerable to criticism as being incomplete because they do not include the critic's subjective point of view. Therefore, it is not easy to determine whether a certain phenomenon is "information" enough to be worth looking into - because what prompts the individual executive to react is intrinsic to his personality, an accumulation of past experiences, values, knowledge, *et cetera*, which in any particular situation culminates in an action, or actions. However, Livingstone (1975) points out (in the context of behavioural modification of an executive) that even "... two or three years immersion (in an alien/foreign) culture would at most sensitise him to the differences between his culture and the company's. It would not transform him ... at worst, it might make him ... depayse, and as a result an alien in two cultures". An organisation scanning profile is made up of collective individual executives' scanning actions.

An organisation's executives will, according to Hambrick (1981), only act on "those phenomena to which their attention is drawn and since information is so abundant can be directed any number of ways but not every way". Aguilar (1967), Kefalas and Schoderbek (1973), and others also describe the manner by which scanning is done by middle and top level managers: as "an activity carried out consciously or unconsciously" and/or on an *ad hoc* basis in the routine course of their day-to-day work, on the one hand, and on the other, it is also an activity that firms organise and coordinate, trying to achieve efficiency through division of labour, *e.g.*, by allocation of scanning responsibility among operating managers, and also, in some firms, the creation of a specialised unit with scanning as its principal function (*e.g.*, a planning department, research division, *et cetera*.)

The studies on scanning done by scholars like Aguilar (1967), Keegan (1967), Collings (1968) and Kefalas and Schoderbek (1973) concentrated on either the formalised or informalised aspect of scanning. They are among those who viewed scanning as the activity of individual managers attempting to meet their own needs for external information. Thomas (1980), Fahey, King and Narayan (1982), and Stubbart (1982), operationalise scanning as the organisational activity of acquiring external information. Diffenbach (1983), Linnenman and Klein (1979) and Kudla (1978) focus their works on the formal aspect of organisational scanning and, in particular, on the role and functions of special scanning units that are often created by large firms for monitoring critical components of the environment. This is one dimension of differences that exist in the study of scanning, *viz.*, differences in the unit of analysis. Another dimension of such different approaches is based on the purpose of scanning. Some studies have considered scanning as the means for acquiring tactical and operational intelligence (Fortune, May 14, 1984). Others have viewed scanning as the process of acquiring information for effective strategic formulation and have concentrated on the role of scanning in evolving long term plans (Klein and Newman, 1983). Some have limited their inquiry only to scanning for competitive intelligence (Porter, 1980; Sammon, Kurland and Spitalnic, 1984) while some others have studied the methods of scanning as an instrument for forecasting technological changes or for managing political risk (Kobrin, 1982).

This thesis is not, intended as a criticism of the individual pieces of research, which have often been most insightful and appropriate given the state of the field at the time, but is rather the identification of a research opportunity and need - that of trying to synthesise these insights in a way that the whole becomes greater than the sum of the parts. Hambrick (1981 and 1982) has already initiated this process of concept-building.

This thesis represents a continuation of the effort, in the context of Malaysia, an Eastern country. However, it has to be emphasised that in as much as there is no universal applicability of all the management prescriptions/theories but open themselves to situationality - norms, tradition, culture *et cetera* - of the locus of operation, the same is true of this study. The problems and techniques of scanning, the findings and conclusions derived herefrom are only generalisable to Malaysia and do not necessarily (in an absolute term) represent the East in comparison with the West as otherwise can be fallaciously generalised/construed or inferred in the comparative findings (on the practice of scanning) between those in the U. S. (West) and Malaysia (East).

A literature review follows in the next chapter. At this stage however, it is interesting to note that almost every author in this subject expresses regret that too little research attention has been paid to this important topic. Aguilar (1967) and Wilensky (1967), pioneers of formal research on scanning made this observation in the late 1960's. Kefalas and Schoderbek (1973), Thomas (1974), and Pfeffer and Salancik (1978) repeated the same allegation in early and late 1979's. Hambrick (1981), and Daft and Weick (1984) have come to the same conclusions in the 1980's. In other words the perception of limited research attention persisted despite the continued research that the topic has attracted.

Why is it that scanning research has not grown? Poor quality or the academic tradition for ignoring past research can, at best, provide only partial answers to this question. As will be argued in the course of the literature review that follows in the next chapter, the principal reason for non-cumulation has been that while a rich stock of insights about the scanning function has been developed through a series of partial analyses, a broad conceptual framework has not emerged from these studies. In the absence of such a

framework, the individual research efforts have not lead to the development of a theory. What the authors above really lament, it can be argued, is not the paucity of research but the absence of a theory.

RESEARCH OVERVIEW

The physical act of collecting information from the environment is carried out by individual members of the organisation. An organisation can only scan through individuals. Understanding how individuals carry out the scanning task is therefore an important piece of understanding how the organisation scans. However, the organisation coordinates the scanning efforts of individuals through the formal organisation structure, the allocation of tasks and responsibilities, the formal and informal definition of roles, the internal information system and through shared context that includes the strategic orientation of the firm, its history and culture, *et cetera*. The organisation affects not only to what aspect of the environment attention is paid, but also how the attended sectors are perceived (Weick, 1969). Thus, clearly, there is also a need to investigate scanning as an organisational process, and to understand the organisational environmental influences that impact upon it. Given that more organisations are creating special organisational units for formal environmental analysis (Diftenbach, 1983), the analysis of scanning at the firm level must include not only the effects that organisation might have on scanning behaviour of managers in general, but also the impact such differentiated and specialised scanning units may have on the overall process through which environmental information flows into the organisation.

Finally, scanning is a means, not an end by itself. The organisation can scan the environment to reduce uncertainties (Cyert and March, 1963), to learn (Daft and Weick, 1984), and to improve the effectiveness of decisions and choices (Aguilar, 1967); Wilensky, 1967). Therefore, any prescriptive suggestions about how firms may organise the scanning functions must be based on an understanding of how information acquired through the scanning process is actually used within organisations. The objective to be stressed here then is the development of a better positive understanding at a theoretical level. Given the state of the field, and in view of the objective of this thesis (stated in the beginning of this chapter) there exist many interesting and important questions that need to be addressed. Some of these are discussed in the context of the literature review that follows in the next chapter. However, the choice of the two objectives from the rich menu of research questions, to the writer's thinking, are the most suitable as a starting point for developing the integrative conceptual framework that makes up the principal objective of this thesis.

As far as the writer is aware, virtually all previous investigations on scanning have been carried out in the United States. Based on such studies, usually within one industry in the U.S., broad generalisations have been made about scanning behaviour of managers and about scanning practices of firms. The field research of this thesis was conducted entirely in Peninsular Malaysia and the State of Sabah and Sarawak, henceforth referred to only as Malaysia. The choice of Malaysia as the research venue offers a number of benefits and adds to the contribution to study. Malaysian firms, as argued in a later chapter, face particularly severe scanning requirements and their coming into the limelight of the international business arena could severely be handicapped by the absence of effective and efficient scanning systems. This makes a study of those systems useful, particularly for deriving prescriptive suggestions. As well as comparing the findings in Malaysia with those previous studies in the United States,

there is an additional advantage in making or creating a larger and more diverse database and this facilitates generalisation and theory building. There is also the personal reason for the choice of Malaysia, as the writer's country of origin. On one hand, this enhances a richer understanding of the (scanning) situation there, for example the cultural aspect and other issues inherent or unique to the place, that arises in connection with the subject of the research; on the other hand, the over familiarisation of the location, can also be construed as bias and hence an impediment to the study. But what and/or however this is seen, it is hoped that good overall parts exceed those small parts that may impede the reliability and enhancement of the study.

This study is structured along three sequential but inter-related stages. First, a broad conceptual framework is proposed, based on a review of the relevant literature. The framework identifies different attributes of individual and organisational level scanning and suggests different factors that may influence or be influenced by those attributes. In this sense, this starting framework is a little more than a laundry list of variables and issues of interest.

In the second component, data on these variables is collected from a sample of 111 managers in 26 Malaysian institutions. Analysis of this data lends to a reduction of the initial framework to a more parsimonious and formalised model of individual level of scanning behaviour.

Finally, case descriptions of the scanning activities of two big business institutions are used in conjunction with the individual level model to make some tentative prescriptive suggestions about how the scanning function can be organised, institutionalised and implemented in large organisations and also to propose theoretical construct that relates

scanning to the strategic and structural contexts of the firm.

THESIS OUTLINE

In this introductory chapter, the outline of the research objectives is presented to provide the overview of the research strategy. In the next chapter, the relevant literature review and the conceptual framework is developed for the starting point of the inquiry.

The third chapter is devoted to research design. Two separate methodologies are adopted for the two level of analyses. To develop an analytical understanding of individual level scanning behaviour, a self administered questionnaire is used, for understanding the scanning function at the organisational level, a situational studies using interviews and observation is employed. In this chapter, the research instrument is being explained and also the description of the respondents to the questionnaire survey. The sample raises interesting issues about what might be the appropriate unit and level of analysis and it will be seen that the individual manager rather than the institution is the most suitable unit for analysing the survey data.

The demographic description of the respondents outlined in chapter three is perhaps not by itself adequate to develop a frame of reference about the sampled managers against which the research findings can be interpreted. An understanding of the nature of the work they do, the writer suggests, is useful both for understanding who the manager is and also for identifying their similarities and differences with other managerial population of interest, for example those in the United States, where the study of scanning originated.

Chapter four, is a description of the responding managers in terms of their work, and a comparison of the findings with those of Mintzberg's study on the "nature of managerial work" conducted in the United States, is made. The similarities in the findings suggest that the present study's observation about scanning at the individual and organisational levels may have some relevance for managers and institutions outside Malaysia even though at the present time this claim cannot be fully substantiated theoretically, given the technical limitations of the sample.

The principal objective of this study is to develop an analytical understanding of scanning behaviour and its dependence on different environmental, organisational and individual attributes. Chapter five introduces these explanatory variables and also the explanation of their various measurements in the research design. In most cases, the variables are complex theoretical constructs, arising out of the combination of a number of responses and the chapter also deals with issues of scaling and reliability of the final measures.

The following four chapters are devoted to the individual level of analysis. Chapter six describes the overall attitude of the managers toward the task of scanning: how important it is perceived to be, and how much time is devoted to it. In chapter seven, the writer describes the context of scanning for the sample of Malaysian managers - the kind of information they collect, the sources they use and how both are affected by individual differences in personal attributes as well as in perception about the environment and the organisation. Then the writer juxtaposes the factors and sources to develop a profile of how external information flows into an organisation. The results of all these analyses are also, where possible and appropriate, compared with results studies on scanning behaviour of American managers.

In chapter eight, scanning is related to the interpretation process described by Daft and Weick (1984) and an attempt is made to test the contingencies suggested in their model. While some aspects of the model are confirmed, others are not, at least in respect of Malaysian managers. However, the findings about how scanning modes are affected by managerial perceptions of the organisation and the environment, the writer suggests, may have significant implication for practice. Causation, in organisational behaviour, is rarely, if ever, unidirectional. Thus, if a certain kind of strategic orientation of the firm given certain environmental characteristics (actual or perceived), results in certain ways of scanning, it is entirely plausible that inducing certain ways of scanning, given certain environmental conditions, may lead to a change in the institution's strategic orientation. In other words, inducing specific scanning modes can be an effective instrument for creating strategic change.

Chapter nine, the last of the four at the individual level of analysis, pulls together the findings of the previous three to build up a structural model of scanning behaviour in an attempt to explain the variations in the way managers scan in terms of the explanatory variables develop in chapter five. The data is not longitudinal and neither is the design of this thesis experimental or quasi-experimental. Thus the ability of the data generated to infer causation is limited. Moreover, structural equation models cannot confirm causation but can only disprove it. Thus the most that can be claimed about the model is that it suggests interesting hypotheses, most of which are consistent with theory-derived expectations. However, not all are consistent, for the relationship between task structure and scanning behaviour that emerges from the data is counter-intuitive, suggesting an interesting future research direction.

In chapter ten, the level analysis is organisational. It attempts to demonstrate that even within the same organisation, there exists a wide range of scanning behaviour among managers and this suggests the need to organise the scanning function so as to provide a degree of coordination. Further, most of the information collected by one manager is perceived as important and useful for others, thus generating a communication need that also demands an organisational arrangement. The writer reviews how the function is organised in a large Malaysian institution and, based on observational interview data, evaluate the strengths and weaknesses of the system. This analysis lays the foundation for certain prescriptive recommendations that the writer makes about how the scanning process can be organised in a large institutions.

The eleventh and final chapter summarises the finding and draws out the major theoretical and practical implications of the study. Scanning is an instrument for organisational learning and adaptation. In this chapter, the writer proposes a conceptual model of the organisational learning process and relate the findings on scanning in terms of this model. The model serves as the basis for suggesting the role that the top management of a firm might play in enhancing the scanning effectiveness. Finally, the chapter of the thesis concludes with a review of the need for follow-up research that emerges from this study.

Chapter Two
**Literature review and conceptual
framework**

CHAPTER TWO

ENVIRONMENTAL SCANNING: A VIEW FROM ORGANISATIONAL THEORY

The middle of this century saw a major turning point in the history of management and organisation theory. Till then, management research was mostly descriptive and the few efforts for developing theories were largely limited to searches for universal principles of management, in the belief that ultimately there was "one best way" of managing organisations. Weber (1947), while conceding that bureaucratic structures and controls could have certain dysfunctional properties, implied that these structures were appropriate for all organisational settings. Taylor (1911), similarly, viewed his principles of scientific management as universally applicable. Most management theorists, at least up to the 1930's either ignored the external environment, or held it constant thus viewing organisations essentially as closed systems (see Miles, Snow and Pfeffer, 1974, p. 245 for detailed discussion).

One of the most important post World War 2 breaks from classical management concepts was the emergence of the open system view of organisations which was in sharp contrast to the previous quest for the "one best way" of management. Conceptually, the open system approach attempted to relate the various parts of the organisation to the whole and the whole to the rest of the environment, visualising the organisation as a "socio-technical system" existing in a state of dynamic equilibrium within a changing environment. Over the last four decades, this view of organisations has emerged as the principal paradigm in the field of management theory through the pioneering work of scholars such as March and Simon (1958), Cyert and March (1963), Emery and Trist (1965), Thompson (1967), Lawrence and Lorsch (1967), and Bertalanffy (1968).

One of the more persuasive accompaniment of the open systems theory is the need for organisations to monitor developments in their external environments so as to create and maintain what Selznick (1957) calls "dynamic adaptation" and Thompson (1967) labels "co-alignment". Irrespective of whether the managerial role is considered to be pro-active or reactive, acquisition, analysis and use of external information remain as key tasks in the overall management process. The only exception is if we accept the more extreme versions of the natural selection view (*e.g.*, Aldrich, 1979 or Hannan and Freeman, 1977). From their writings it can be argued that ". . . both the source of variation in organisational strategy and structure and the process through which information about the environment is obtained are of little important" (Kobrin, 1982, : p16). The theoretical arguments in this debate between the deterministic and voluntaristic approaches to organisation theory are well known and need not be repeated here (see Astley and Van de Ven 1983 for a review). The debate, so far, has been based chiefly on ideologies and beliefs of individual scholars with anecdotes as supporting evidence. An understanding of the role and utility of scanning may be useful as a starting point for a more analytical evaluation of these alternatives perspectives. For instance, empirical evidence that persistently successful firms devote substantial resources on a continuing basis for scanning their environments would be inconsistent with the deterministic model, at least in its extreme form. Further, evidence that information so collected can be, and is, used by firms to take pro-active steps that on *ex-post* analysis, proves to be beneficial, would provide support to the voluntaristic school. Viewed from this perspective, a study of the scanning behaviour of firms and of the effect of scanning on decision making can make a significant contribution to the field of organisation theory.

The open system view is more of a paradigm than a theory. A number of specific theories about organisations and organisation designs have been proposed, based on this paradigm. Two of these, the information processing theory of Selznick (1957) and the model of organisations as an interpretation system Galbraith (1977), are of particular

relevance to a study on the scanning behaviour of a firm.

Organisations as Information Processing Systems

The view of an organisation as an information processing system is receiving increasing theoretical and empirical attention in the literature on organisation theory (Daft and Macintosh, 1981). Derived from the open system concept, this suggests that organisations develop information processing mechanisms as a means of dealing with internal and external sources of uncertainty (Tushman and Nadler 1978). Information processing, in this context, entails the gathering, interpreting and synthesis of information for decision making process. Galbraith (1977) has theorised that information processing reflects uncertainty created by diverse activities and goal difficulty. Variables in the design of organisations such as structural self-containment and vertical information system, according to him, should provide sufficient capacity to meet information needs. Tushman and Nadler have proposed that organisational effectiveness is a function of the fit between the uncertainty of organisational structure to provide participants with required information.

Empirical studies have indicated that the external environment represents one source of variation in information processing requirements. In general, complex environments require more information processing than simple environments (Tushman, 1978, 1979; Van de Ven and Ferry, 1980). This relationship is the basis for theories that relate task uncertainty to structure (Galbraith). In an era of increasing environmental complexity, the key to organisational effectiveness, according to this view, lies in the ability to acquire, interpret and use information so as to manage and minimise the process of increasing external uncertainties.

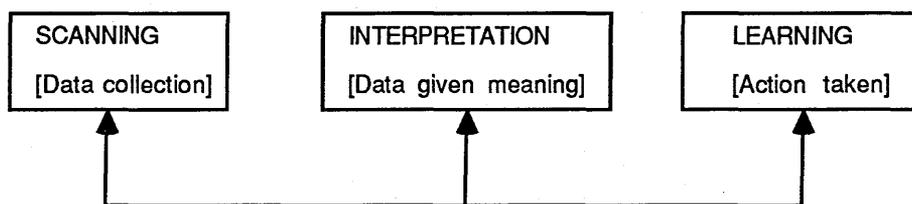
Organisations as Interpretation Systems

Daft and Weick (1984) have argued that most prevalent views about organisations tend

to be over simplistic. They have proposed a view of organisations as interpretation systems which must "differentiate into highly specialised information receptors that interact with the environment". Organisations, according to the authors, are highly complex systems wherein "information about the external world must be obtained, filtered, and processed into a central nervous system of sorts, in which choices are made. The organisation must find ways to know the environment. Interpretation is a critical element that distinguishes human organisations from lower system".

Daft and Weick also have suggested that the organisational interpretation process can be organised into three stages that constitute the overall learning system [Figure 2:1]. The first stage is scanning, which is defined as the process of monitoring the environment and providing environmental data to managers. In the next step, data is given meaning through the process of interpretation - of sharing perceptions and construction of cognitive maps. Learning, the third stage, is distinguished from interpretation by the concept of action: "Learning involves a new response or action based on the interpretation".

Figure 2:1 - Organisations and Interpretation Systems



Daft and Weick (1984) propose a model of organisational interpretation using two key dimensions: (1). The managers' belief about the analysability of the external environment (assumption about the environment), and (2). the extent to which the organisation intrudes into the environment to understand it (organisational intrusiveness). The authors argue that organisations reflect different scanning

characteristics, interpretation processes and, hence, strategy and decision making behaviour which can be analytically related to these dimensions. In other words, they suggest that scanning behaviour is influenced by perceptions about the environment and strategic orientation of the firm - a proposition that is yet to be tested but, if verified, could develop a far more analytical understanding of the phenomenon than currently exists through the limited number of mostly descriptive studies that have been conducted on these topics.

Environmental Scanning and the Information Cycle

Pfeffer and Salancik (1978) review literature on organisation-environment relationship and conclude that scanning is a key topic for explaining organisational behaviour. As yet however scant attention has been paid to it by management researchers on environmental scanning process.

The preceding brief review of a few major themes in organisation theory is aimed at demonstrating the importance of scanning in some of the modern views about organisation and management. While arguments and citations can be marshalled almost endlessly to support the contention which is about to be made here, it may be more efficient merely to state it as a widely accepted starting premise for this thesis : over the last four decades, importance of external information has increased enormously for all organisations. This has been due, on one hand, to the accelerating rate of change (Toffler, 1970) and, on the other, to the increasing awareness of the importance of organisation-environment interdependencies.

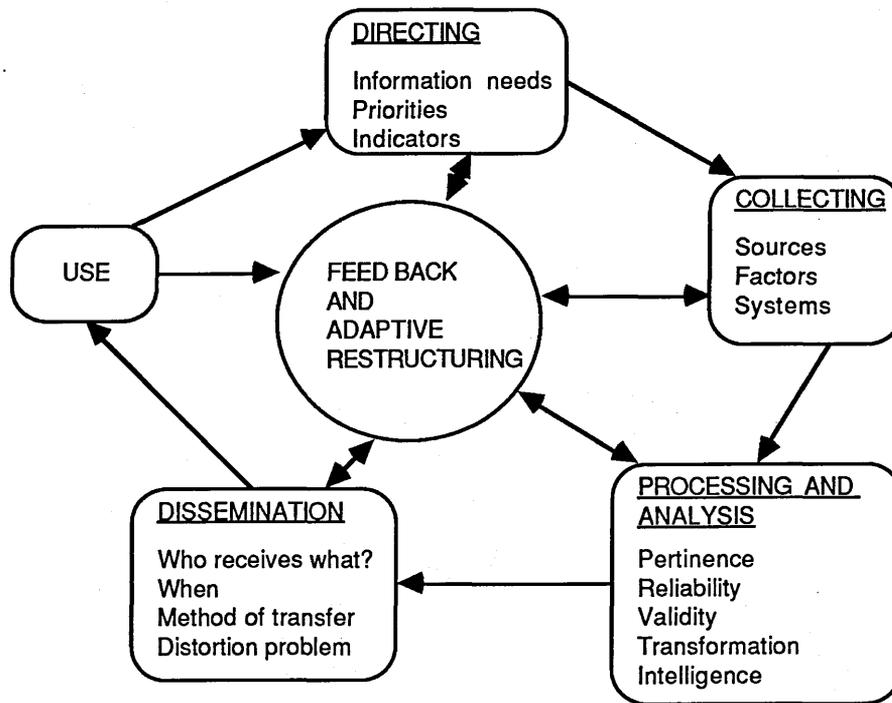
A parallel process that has occurred over approximately the same period is an explosion in the generation and availability of information. Sociologist Daniel Bell writes that ours "is a rare moment in cultural history when we can self-consciously witness a large scale social transformation". The change Bell refers to is the "informatisation of

society", propelled by the convergence of spectacular progress in both computer and telecommunication technologies. The resultant "information deluge" has been documented by Weinberg (1963), Drucker (1964), Toffler (1970), Cleveland (1982) and many others and has since become a widely known and accepted phenomenon. One of its consequences is that managers today face a twin problem - on one hand, they need more and more external information to carry out their tasks effectively and, on the other, they face a serious information overload that far surpasses their cognitive capacity.

Given this problem, it can be argued that every organisation today, requires a system, either formal or informal, for effective information management. The system as suggested by Montgomery and Weinberg (1979), can be viewed in terms of the information cycle (Figure 2:2). The first step in the process is to identify information needs, lay down priorities, and to decide on the indicators to be monitored. The identification of needs leads to the next step : that of collecting and gathering the information.

The collected information then needs to be processed and analysed before it is ready for dissemination and use. The use, in turn, determines further information needs and feeds back into the cycle.

Figure 2:2 - The Information Cycle



The term "scanning" is usually used to denote the activity of information acquisition. The definition encompasses only the first two steps of the cycle. But, each stage of the cycle is inter-related with all others and it is impossible to meaningfully analyse or research on, to the total exclusion of others.

Thus, in this thesis, while the focus is clearly on the process of acquisition of external information, a relatively broader view is taken to relate the acquisition process to the other stages of the information cycle. To that extent, the information cycle or the "interpretation process" is the broad arena of this dissertation.

PREVIOUS STUDY ON SCANNING

In the late 1960's the Harvard Business School pioneered research on the topic of scanning which had led to useful insights on how individual managers acquired external strategic information (Aguilar, 1967; Keegan, 1967; Collings, 1968). It was found that

market information dominates the scanning function in domestic firms but regularity factors and broad social and political issues assume greater importance for multinationals. Managers were found to make far more use of outside sources than inside sources and to rely largely on their personal network of contacts for meeting their information needs (these conclusions are also supported by the findings of Kotter, 1982; and Mintzberg, 1973). Most information was found to be obtained unsolicited and through relatively passive and undirected surveillance rather than through structured and active search.

After several years of relative neglect, research attention on scanning has been growing from the mid-1979's but the level of analysis has changed to the organisation. All these studies have, however, focussed only on the formal scanning systems of firms as represented through a scanning or environmental analysis unit. Out of these studies has emerged an improved awareness of the factors that help and hinder effectiveness of such formal scanning organisations (Diffenbach, 1983; Stubbart, 1982).

A combined top-down and bottom-up approach has been found to be essential for success of the scanning function. The chances of success of a scanning unit have been found to increase substantially if a senior, experienced and respected executive is made responsible for the unit. On the other hand, changes in top-management, decentralisation, tight financial controls and entrusting scanning to new or junior personnel have been found to diminish effectiveness of the formal environmental analysis unit. Organisational resistance to the unit has also been found to reduce to the extent that specialised scanning functionaries provide information early before prestige and careers get committed on particular decisions. The most important problem areas in scanning have been identified as difficulties in establishing information needs, difficulties in interpreting information in terms of relevance to the organisations and difficulties in integrating scanning with planning or decision making process.

Recent research has also built up a large body of evidence that suggests such formal environmental scanning is receiving increasing attention in business organisations, particularly in large business organisations. Over seventy three percent of Fortune 500 firms in the United States have been found to use formal environmental analysis (Diftenbach, 1983). There has been a rapid growth in the use of special techniques such as Multiple Scenario Analysis (Linnenman and Klein, 1979) and in the integration of scanning with corporate planning (Kudla, 1978). Special organisations have sprung up to provide needed scanning services (Fortune, May 14, 1984). Formal scanning with twenty to one hundred staff members have also existed for over a decade in many MICs (Thomas, 1980) and an increasing number of firms are found to be establishing such units.

Normatively, most authors agree that routine surveillance of the environment by operational managers in the regular course of their work is a major source of environmental information for most firms (Collings, 1968; Mintzberg, 1973; Kotter, 1982). Unfortunately, however, most empirical investigations into the organisational scanning function have been concerned only with the formal scanning process and there is no documentation of how this informal organisation-wide surveillance mechanism functions. Further, as argued in the first chapter, scanning is the means to an end, not an end by itself. The effectiveness of an organisational scanning system depends on the use that the acquired information is put to. Between scanning and use lie the process of communication, interpretation and analysis (Montgomery and Weinberg, 1979). There is little evidence in the literature that any systematic empirical attention has been paid to the systems through which these functions are carried out in an organisational setting.

If detailed descriptions of scanning practices are rare, normative and prescriptive models of scanning systems abound in the academic literature (*e.g.*, Muarry, 1972, Thomas 1974; Cleland and King, 1975; Hills and Cravens, 1975; Neubauer and Solomon, 1977; Montgomery and Weinberg, 1979; Kalff, 1980; Klein and Newman, 1983;

provides a detailed review of all the models that predate this thesis). Most of these proposals seem to fall into two broad categories. First, there are a number of suggestions about monitoring the immediate task domain of the organisation - the "Area of Influence," as Montgomery and Weinberg (1979) call it. An extreme version of these provide a laundry list of "How to Snoop on Your Competitors" (see Fortune, May 14, 1984). The methods are often barely legal (for example, conducting phoney job interviews with competitor's employees or getting customers to put out phoney bid requests) or highly esoteric (such as measuring rust on the rails of railroad siding leading to competitors plans for determining shipment volumes). The more modern and analytical schemes within this category seem to be largely modeled on Professor Michael Porter's influential work on formulating competitive strategies (Porter, 1980). He himself dwells at length in the book about scanning requirements and methods for effective industry and competitive analysis. Practitioners and consultants have since developed his concepts of a business intelligence system in more practical terms and a book by Sammon, Kurland and Spitalnic (1984) provides a comprehensive review of various "hands on" approaches for monitoring the immediate task environment.

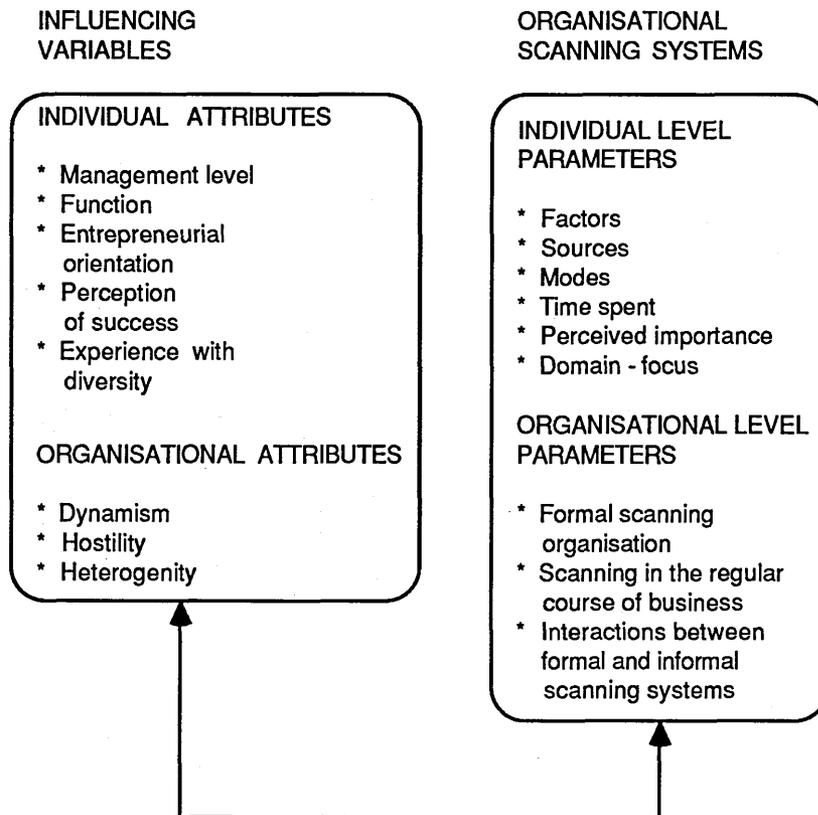
The other type of prescriptive models focus on long term objectives of the firm and suggest scanning requirements for supporting a long term planning system. A recent and representative example of such a scheme is SPIRE - Systematic Procedure for Identifying Relevant Environments - suggested by Harold Klein and William Newman (1983). The methods suggested by these authors depend on the concerned manager being able to generate a list of key strategic planning components, another list of environmental factors felt to have an impact on those components, and finally a set of linkage statements about the nature of those impacts. These statements are then computer analysed to arrive at a broad groups of environmental factors that have similar impacts on different strategic planning components as well as different components that are similarly affected by key environmental factors. This analysis leads to the

construction of a flow chart diagram representing the important environmental dynamics for each set of clustered strategic planning components. These environmental factors, in turn, define the firm's scanning domain.

Only recently some researchers have started looking at scanning as a process rather than as a function and exploring the links between scanning and other organisational processes. The most significant empirical effort has been Hambrick's (1981 and 1982) who has investigated the effect of organizational strategy on scanning behaviour and of scanning on internal distribution of power. Overall, he failed to confirm the hypothesis of a strategy-scanning link but, as pointed out by Hambrick himself, this could have been due to the nature of his sample or because of measurement difficulties.

Figure 2:3 represents the conceptual framework that, to borrow a phrase from Roethlisberger *et al* (1939), served as a walking stick in doing this thesis inquiring into the phenomenon of scanning. This is not a model that in this thesis the writer propose to test in any formal sense here. It is merely a shorthand summary of the literature that being constructed as a guide to identify issues and variables of interest. Implicit in the framework, are a series of preoccupation about the scanning behaviour of individuals and organisations. These preoccupations, however, fall short of being testable hypotheses since the variables themselves span different units and level of analyses. The principal functions that the framework served were to direct the process of data collection and to provide a starting point for data analysis.

Figure 2:3 - Conceptual Framework



In this section, the framework is explained briefly. Each of the variables in the framework and all the associations suggested in it are explained somewhere in this thesis, *i.e.*, in the section where data related to those variables are analysed. In the course of the research, the writer follows the approach of inductive sense-making by iterating through the data and the concepts, and the data clarified the concepts just as much as it tested them. It is this interactive exploration that is presented in chapter four and nine. This exposition is facilitated by presenting the concepts along with the data. Besides, such a form of presentation is also a more accurate representation of the actual research process.

The Dependent Variable : Scanning Attributes

Organisational scanning is a multifaceted activity. That, as discussed in the introductory chapter, is a starting premise of this thesis. To understand the scanning function in a large firm, one must study the scanning behaviour of the general body of operative managers, at the micro level, and also the scanning organisation of the firm, both formal and informal, at the macro level. In other word, the organisational scanning system must be represented through a set of individual level parameters and also through a set of organisational level parameters.

At the individual level, the traditional parameters have been the kinds of information acquired (the factors), the sources used, the extent of surveillance versus search (scanning mode), and the manager's involvement with the scanning task (perceived importance of scanning and the time devoted to this activity). These parameters, first proposed by Aguilar (1967) and adopted by almost all researchers investigating individual level scanning, have been very useful in developing a descriptive understanding of the scanning behaviour of managers.

One difficulty encountered in dealing with these parameters, however, has been that they have not led to generalisations in an analytically meaningful way. These parameters do not have any underlying theoretical construct, nor has it been possible to build up a ground-theory based on them. The writer of this thesis would add one more to this list of individual level parameters: the extent of domain-focus. The construct is built on two of the existing parameters, *viz.*, the kinds of information acquired and the sources used. Domain-focus refers to the extent to which the manager's scanning activities are limited to the current task-domain. It is contrasted with scanning behaviours that look beyond the task domain to the broader environment within which the firm operates.

The origin of this parameter lies in an apparent contradiction in the firm behaviour. Most organisations of any size have fairly extensive systems for long term planning and most of these systems are designed to achieve the "rationality" implied in the normative planning models (*e.g.*, Ansoff, 1977). Yet, empirical evidence shows that the outputs of such systems are not fully "autonomous" (Burgelman, 1983) and that existing structure and strategy affect future strategy leading to what Mintzberg (1978) calls "emergent" strategies of organisations. The contradiction to be explained is how "emergent" strategies emerge out of the "rational" process of formal planning that most big business institutions adopt.

The extent of domain-focus in managerial scanning behaviour, it is suggested here, can provide an explanation of this apparent contradiction. If scanning is entirely limited to the current domain of the firm, the information base on which future strategy is determined is limited to the current activities of the firm. This constraint, as will be argued in later chapter, can lead, at best, to incremental strategies (Quinn, 1980) or, at worst, to "muddling through" (Braybrooke and Lindbloom, 1963).

At the organisational level, as is argued in this and the earlier chapter, one must look at the way the scanning of individual managers is organised, formally or informally, and also at the role and functions of the specialised scanning units that have come to exist in most large business institutions. These are the two principal components of the organisational scanning system and must be analysed independently. But the two components are also mutually interactive and such interactions form the third and, in retrospect, perhaps the most important parameter of the organisational scanning mechanisms.

The Influencing Variables : Individual, Organisations and Environmental Attributes.

A commencing premise in this thesis is that scanning behaviour of individual organisations may be affected by a host of individual, organisational and environmental

attributes. Previous studies on scanning have already suggested some of these influencing variables. Research in the fields of cognitive psychology, business policy and organisational behaviour suggest a number of others that have so far not been considered in scanning studies.

The individual characteristics included in the framework of this thesis are organisational roles (*i.e.*, level in the management hierarchy and departmental affiliation), past history and background, and the individual's strategic orientation. (There is no assumption of the attributes being independent).

Aguilar (1967), Collings (1968), Keegan (1967), Kefalas and Schoderbek (1975) and Hambrick (1982), among others, have demonstrated the influence of management level and departmental affiliation on individual scanning behaviour. The possibility that the background of managers, and, particularly, their exposure to diversity and their perception of success may affect scanning behaviour is derived from the suggestions and findings of Schroeder, Driver and Streufert (1968); Keen 1973; Hogarth (1980). Wide experience with diversity can enhance an individual's cognitive complexity, thus improving his/her ability to comprehend and integrate diverse pieces of information and to tolerate and deal with ambiguity. Perception of success can, similarly, permit innovation and boldness in decision making and a wider level of search beyond the immediate problem area (*i.e.*, beyond problematic search as defined by Cyert and March, 1963). Finally, the possibility of the individual's strategic orientation (entrepreneur versus trustee) affecting the way scanning is carried out arises out of the arguments of Stevenson (1984) and other researchers on entrepreneurial behaviour. While individual behaviour is affected by individual attributes, it is also shaped by the characteristics of the environment and the nature of the organisation to which the individual belong. Organisations and managers dealing with non-complex environments may have fewer critically important information categories required for decision making. They may not require complex scanning system. On the other hand,

organisations facing complex environments may need extensive scanning of individual or cluster of sectors in the environment. Further, in a stable environment, scanning may be less domain constrained and may depend more on search, while in a dynamic environment, surveillance of the task environment may constitute a larger component of the scanning activity. Theoretically, these arguments follow from proposals of Thompson (1967) and Galbraith (1977). Empirically, earlier on, the findings of Fahey and King (1975) and Kefalas and Schoderbek (1973) provide at least limited supporting evidence.

The effect of a firm's strategy on its scanning system and on the scanning behaviour of its managers have been proposed and tested by Hambrick (1981). Put simply, the more analytically a firm is oriented, the more extensive is its scanning system may be expected, since scanning provides an input for carrying out such analysis. A prospecting firm (Miles and Snow, 1978), in contrast, may depend more on experimentation and trial and error and may show lesser scanning intensity. These are the influencing variables which are included in the framework. This is not an exhaustive list and there may be a number of other factors that can affect how managers and organisations scan their environments. In the final analysis, choice of these and not the other variables for inclusion in the framework is a subjective decision based on best judgement, keeping in view the conflicting demands for parsimony and completeness.

Feedback

Finally, in organisation behaviour, causation is rarely if ever, unidirectional. Thus, while the scanning parameters may be influenced by the individual, organisational and environmental attributes, the relationships may well be a confounded simultaneity problems. For example, if organisational strategy affects scanning by determining what kind of information is perceived as needed, the aspects of the environment that are paid attention to, is also affected by scanning, for strategy is both autonomous and emergent

and the "formation of strategy depends on information acquired through scanning" (Mintzberg, 1978; Burgelman, 1983). This interdependence is shown in the framework through the feedback loop.

Chapter Three
Research design and implementation

CHAPTER THREE

RESEARCH DESIGN AND IMPLEMENTATION

The field research for this study was conducted entirely in Malaysia, between July, 1988 and December, 1988. The principal reason for the choice of Malaysia as the research venue was of convenience and familiarisation - being the researcher's home country : the ability to speak the language, being familiar with the locality, are among the added advantages beside having contacts and almost ready access with many of the leading organisational establishments in Malaysia. But, as will be argued in detail later in this chapter, selection of the research venue/site offers a number of special benefits. Institutions in Malaysia have been uniquely successful in their field, among others in the Association of Southeast Asian Nations (ASEAN), if not in the international business arena also.

As was mentioned earlier in the introductory chapter, Malaysian institutions experience a particularly severe need for environmental scanning and, given their constraints compared to their British gurus and other giant competitors like the United States (U.S.), and closer home Japan and Korea, *et cetera*, they seem to be developing good scanning mechanisms. As noted earlier on, all past researchers on scanning have conducted and used firms in the U.S., and the choice of Malaysian firms allows the researcher to add breadth to this body of research as well as to provide a comparative dimension to this research study by comparing the findings with those of earlier studies.

THE CHOICE OF MALAYSIA

Malaysia, according to Kurian (1987), has one of the most impressive economies in Asia after Japan and Singapore. It is one of the upper middle-income countries of the world with a free-market economy in which the private sector is dominant.

Malaysia is of course known as the world's leading producer and exporter of rubber, palm oil and tin. It is also a principal exporter of tropical hardwoods beside having a large reserves of petroleum and natural gas. Indeed, Malaysia is also one of the most resource-abundant countries in Southeast Asia. And just to have a glimpse of its economic well-being, the average annual increase of the Gross National Product (GNP), measured in constant price, was 7% during the 1961-76 period rising to 8.5% in the 1976-80 (Malaysia's Third Plan or Third Malaysia Plan). In 1984, the growth rate of its GNP was 7.3%, the highest since the economy retreat in 1981 because of the international recession.

The upturn was the result of a two-year programme of structural adjustment undertaken by the government with the aim of reducing its budget deficit and the deficit of the current account of its balance of payment (BOP). In 1985, however, GNP declined, in real terms, by 1.5%. The economy was projected to expand by 5% per annum during the Fifth Malaysia Plan (1985-1990), a lower rate of annual growth than the 5% that was achieved in the Fourth Malaysia Plan (1981-1985).

In 1987 a sharp recovery in commodity prices, together with a strong upturn in non-agricultural activity, helped to increase real GNP by 5.5%. Malaysia's GNP per capita, at current market prices, declined from M\$4,581 in 1985 to M\$4,088 in 1986, but rose to M\$4,416 in 1987. The forecast for GNP growth in 1988 is 5.3% (no official figure has been computed for this period during the time of writing).

The country has indeed shown (see Figure 3.1a, 3.1b, and 3.1c) a marked progress in the last few years, particularly in the area of international trade exposure wherein the need for scanning is invaluable.

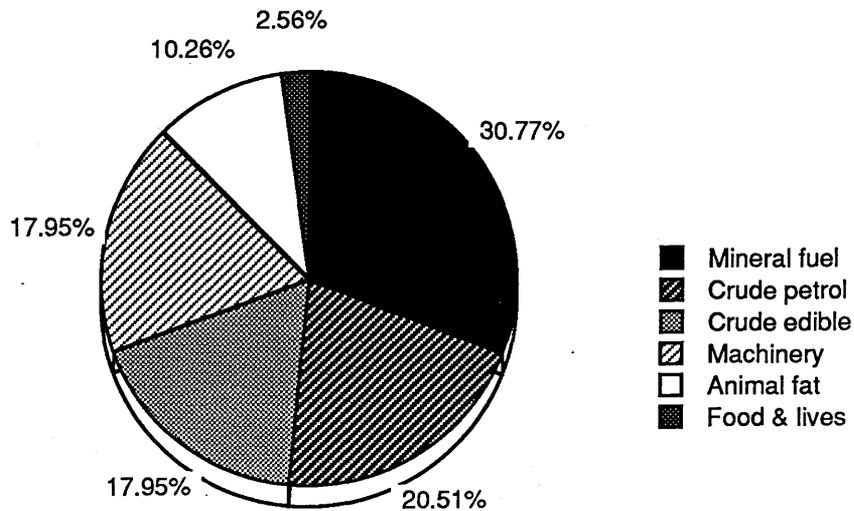


Figure 3.1a : Malaysian Export (fob) - by product , 1985

Low (1989) describes the Malaysian trade climate as follows : "In the mid-1980s export earnings were equivalent to more than one-half of the country's GNP. In 1987 total exports were 61% of GNP. As growth in mineral exports continued, the mining sector replaced the agricultural sector as the chief source of export earnings. Rubber, which had been the country's largest export earner since 1960, has been second to crude petroleum since 1980 and fell behind sawlogs in 1987. Its share of total exports decreased from 16.6% in 1980 to 8.7% in 1987. Exports of logs (including sawn timber) and palm oil (including palm kernel oil) provided 13.4% and 8.2%, respectively, of total exports in 1987. Manufacturing accounted for 44.8%, crude petroleum 13.9%, LNG 3.8% and tin 1.9%. Gross exports reached M\$45,176m. in 1987, while gross imports were M\$31,983m., contributing to a surplus on the current account of M\$5,887m. (equivalent to 8.1% of GNP.), the largest such surplus on record. Malaysia's main export outlets are Japan, the USA, ASEAN countries and the EEC, which together accounted for 74.6% of total trade, remained Malaysia's principal trading partner, with Singapore accounting for 18.2%. Malaysia maintained a favourable balance of trade with all its major trading partners".

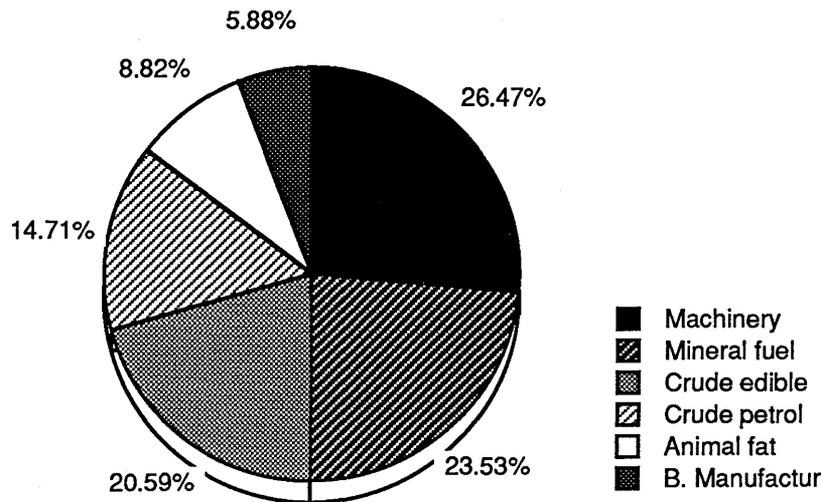


Figure 3.1b : Malaysian Export (fob) - by product, 1986

This phenomenal success in multinational business, by itself, makes Malaysia an interesting venue for study. What makes it more interesting is the way the progression of successes being achieved and, in particular, the role played by the government in its *Look East Policy, privatisation, et cetera*, and in Sabah, East Malaysia the *People's Development*, a concept developed by a Harvard trained Kadazan economist.

The marked difference of the Malaysian management style from that of its UK, USA and other counterparts is its engrossment in achieving the New Economic Policy's (NEP) targets - translated in operational term as "the protection of the indigenous' or *bumiputra's* interest, Maung Kyi (1988) describes it as "welfarism".

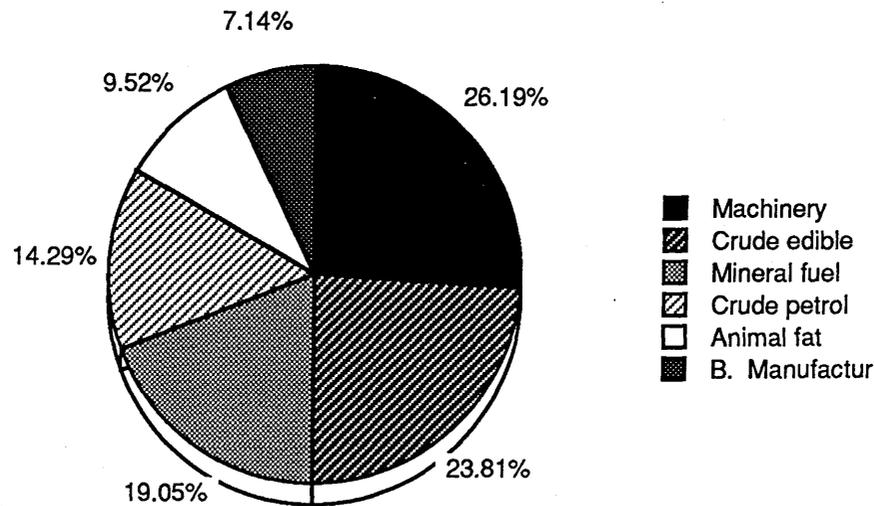


Figure 3.1c : Malaysian Export (fob) - by product, 1987

To maintain and improve their position in the different international markets, Malaysian firms (mostly government backed or owned) need highly effective scanning systems. Their scanning problems, in many ways, are more complex than those of their U.S., Japanese, or European competitors. Their domestic markets are smaller and considerably less developed. They do not have the extensive internal infrastructure for international (*e.g.*, interstate and/or world wide computer link, *et cetera*) information gathering that their older and more established competitors have. They also do not have as much support from the government or private scanning and research institutions, as do firms in the UK, USA or Europe. Thus, while their scanning requirements are just as intensive as those of their competitors, their resources are far less. Despite this handicap, if they have done well, as they have, they must be doing something different and something right. To the extent that one of the objectives of this research is to evolve prescriptive norms for scanning, there are obvious justifications for studying the more successful firms for they, rather than the less successful or even the "average" firms, are apt to innovate and adopt novel and efficient methods that others might find useful to emulate. According to Galaskiewicz and Wasserman (1989) "organizational actors are more likely to mimic those organizations to which they have some interpersonal tie

via boundary-spanning personnel . . . an organization may mimic those that it thinks are particularly successful but more likely it will mimic those organizations that it trusts. Interpersonal networks in highly competitive organizational fields are important mechanisms to sort out trustworthy information. While environmental conditions create the uncertainty that motivates organizational mimicry, it is the network ties of boundary-spanning personnel that tell us who they will imitate and thus how they will behave".

Studying Malaysian institutions offers another important benefit. Firms have developed to the present stage they are at, through adopting a followership strategy, not only for technology and marketing but also in their organisational systems and processes. Example worth citing are the practices of a number of institutions in Sabah, East Malaysia (see Table 3.2), *viz.*, Sabah Development Bank Berhad, Institute of Developmental Studies, the Sabah Foundation, *et cetera*, emulating the practices of having a five-day week work, not having perhaps known the real concepts behind it, are now debating whether to revert to the original five and a half day work week. This is an example of followership strategy in action. It is the observation of the writer that it is a common practice for Malaysian senior executives to make frequent trips to other countries to observe organisational systems and then implement them in their own firms - a most pronounced aspect of followership and adaptation and strategy being practiced in many Malaysian institutions. This is a process of *organisational isomorphism* of sorts (DiMaggio and Powell, 1983), for the organisations concerned had to change their ways of working so as to match those of their suppliers and customers.

The interesting aspect, however, is that two very different organisational systems have been synthesised in the process, as the Malaysian institutions picked and chose systems and structures from the United Kingdom, Japan and the United States. For external dealings, they adopted largely the United Kingdom practices; for internal management, they internalised many aspects of the Japanese and Korean style, about which the

government is very keen. This is seen, in practice, enshrined in and the tenet of the present *Look East Policy* concept, *Malaysia Incorporated*, privatisation, *et cetera*. This synthesis of distinct management systems make Malaysian firms unique and specially interesting to study.

Malaysian firms are also arguably under-researched and deserve serious academic attention. Selecting Malaysia as the venue, therefore, adds a special and interesting dimension to this research study; that of developing a better understanding of a new and successful phenomenon. The principal problem arising out of the choice of Malaysia as the research venue is that the researcher cannot technically, **generalise** the findings to other population of interests such as the United Kingdom managers, *et cetera*. In survey research, generalisation is always limited anyway, because the practice of management differs not only in different countries but also among industries in the same country, and also even among individual in the same organisation, Maruyama (1985)'s *mindscapes* typology. Ultimately, as argued by Pettigrew (1974), the study of management must be situational since the practice of management is situational. Therefore, selecting a survey sample on the basis of representativeness is not technically feasible because managers, unlike elementary particles or national currencies, can never be classified into homogeneous populations, irrespective of how deeply we segment or how many variables we control for.

In behavioural research, technical generalisability to define populations is not a major criterion of research venue in large part, because one can be technically correct only when the populations are uninteresting. An alternative objective, the one adopted in this study, is to find new ideas and insights; to suggest rather than to prove since proof, in the Popperian tradition of positivist falsificationalism, is permanently beyond reach (Cook and Campbell, 1979, p 20). As argued by Kidder (1981, p 440), if this be the objective, a convenience sample may be no less suitable than a random sample and can, often, be more appropriate. If indeed management is a profession, there must be underlying similarities that cuts across companies, industries and countries. And, if

those similarities exists, one can find them no matter where one looks. In other words, if there are interesting generalisation that can be made about any management behaviour, including scanning, one can find them (but not prove them) in Malaysia, just as much as in Scotland or elsewhere.

This argument is developed more extensively in the chapter that follows, with the support of the data acquired in this research. The study will attempt to demonstrate that for a number of interesting proxy and background variables, the Malaysian managers that acted as respondents in this study are no different from Japanese or Scottish managers or others studies done by other researchers. Much later on, in this thesis, the comparison of the descriptive statistics about the scanning behaviour of Malaysian managers with those found in past scanning research using the United States, samples show that the two are similar and that the minor differences that exist can easily be traced to simple and perfectly understandable reasons. In other words, the underlying similarities do indeed exist as revealed by the empirical analysis. Thus, the analytical content of this study; the associations and causal relationships found or suggested may be generalisable to a much larger population than can be claimed statistically from the sample.

DATA COLLECTION

The questionnaire survey covered twenty six organisations from five groupings/classifications by types of product/services (Table 3:1). Interviews with one hundred and eleven personnel with the rank of senior officers (SO) to managing directors (MD) and government cabinet ministers, and detailed in-plant observations, are the principal data gathering method use in this thesis.(These institutions are either wholly commercial, not wholly commercial, in their nature of operation, and/or government owned/backed, or had been privatised).

Table 3:1 - Group/classification of firms according to types of products/services

Group 1 :	Financial, Investment and Insurance
Group 2 :	Manufacturing and Engineering
Group 3 :	Chemical, Petroleum, Food and Beverages
Group 4 :	Agriculture, Forestry, Government institutions
Group 5 :	Services industries, viz., hotels, public transport, airlines, hospitals, <i>et cetera</i> .

The Questionnaire Survey

During the last few months of 1987 and up to May 1988, letters were sent from the University of Glasgow, Scotland, asking permission to conduct research survey in one hundred and fifty two selected institutions (from five groups by products/services classification as in Table 3:1). (a). **Asia's 7500 Largest Companies in 1987**, and (b). **Major Companies of the Far East 1987, Volume 1: South-East Asia**. The current addresses of the institutions were checked against a list found in the Trade Section of the Embassy of Malaysia in London for accuracy (Malaysia at that time *i.e.* 1987, has just adopted the postal coding system). Of the one hundred and fifty two institutions/firms, 82% responded and of those that responded, 73% granted permission for the researcher to conduct the survey, the rest, or 9% politely declined. Of the twenty seven organisations that did not respond, one government own newly privatised firm, in particular, was not sure (was found much later on to be so) of what to do about the researcher's request for research survey access, and in the state of being uncertain, wrote a letter of verification to the researcher's supervisor Professor J M Livingstone, to confirm if indeed the requestor was an authentic *bona fide* student of the University of Glasgow. The researcher found later during the field survey trip that the firm is engaged in producing a highly classified product. Additionally the researcher has no personal contact in the firm, which culminated into the major cause for the much reluctance and uncertainty in the part of the firm and ultimately the very

polite but firm refusal of access. As the various firms are very geographically scattered throughout the country, (see Table 3:2) and again the severe flood that hit the country during the month of July to November 1988 made travelling impossible (all establishments were closed for weeks and months in several areas), coupled with the various year-end annual festivities, the researcher's movements were very much hampered affecting in part the thoroughness of the research in time to return for residency at the University of Glasgow, Scotland.

Table 3:2 - Malaysian States and their capital cities - area in square kilometer and distance (flight) from Kuala Lumpur.

<u>State</u>	<u>Area (sq. km.)</u>	<u>Capital state</u>	<u>Distance from Kuala Lumpur</u>	
			<u>Nautical miles</u>	<u>kilometer</u>
Johore	18,986	Johore Bahru	191	354
Kedah	9,426	Alor Star	199	368
Kelantan	14,943	Kota Bahru	190	352
Malacca	1,650	Malacca Town	NA	NA
Negeri Sembilan	6,643	Seramban	NA	NA
Pahang	35,965	Kuantan	121	224
Pulau Pinang	1,031	George Town	153	283
Perak	21,005	Ipoh	.96	178
Perlis	795	Kangar	NA	NA
Sabah	73,771	Kota Kinabalu	906	1,678
Sarawak	124,449	Kuching	562	1,041
Terengganu	12,955	Kuala Terengganu	172	318
Federal Territory	243	Kuala Lumpur	NAp	NAp

Note : NA - Not available
 NAp - Not applicable

Source : Wings of Gold, February, 1989.

In-plant Observation

Detailed interviews and in-plant observations were conducted in two large government owned and privately backed institutions where the researcher has personal contacts with the top level managements who approved the research in plant observation. It may be noted at this point that Malaysian firms, generally, are not known to be open for

research access, particularly when this involves with a lot of asking questions. The contacts consented on the understanding that the firm would not be identified by its real name in this thesis or elsewhere or the information obtained therefrom not be "used to discredit the government or the firm" or any findings of the research undertaking contravening with the Malaysian law.

Although information could easily be obtained through the various discussions with the managers of the sections and/or departments, it was expected that a much richer understanding of their system and processes could be acquired through direct observation of their work. Accordingly, the researcher spent thirty two days in the organisations, observing the activities of the managers/officers and the staff and also engaging in detail discussions about what they did, how they did it and the reasons for both.

SAMPLE

A total of one hundred and eleven questionnaires were completed during the months of the July 1988 to January 1989. Because of the research design, whereby the individual respondent filled the questionnaires in the presence of the researcher so that any questions pertaining were clarified on the spot, no evaluation of non-response bias is possible. On the other hand, that act of filling the questionnaire in the researcher's presence, can in itself, be construed as bias, in addition to others of its kind, *e.g.*, because the researcher is a government sponsored equipped with letter of introduction (authorisation) from the Chief Minister's office of the State Secretary, (Career and Training Division). In addition to, in most cases, the researcher who is also known to most of the respondents, and would, in the way-of-doing-things in and of that place, "lose face", if the prospective respondent refused to answer questions, after initially consenting to accommodate the research survey. This is termed as "*guli-siku*" in the major vernacular of the place, which is tantamount to bad manners and produces bad

omens, a practice to be avoided at all costs by the local people. This case is, not of course, applicable to those who refused from the outset. Whatever the nature of the biases construed to have marred the validity of the data obtained in this research survey, should be viewed as of the nature that is not within the sphere of the researcher's willful control.

Age

Out of the one hundred and eleven respondents, one hundred and ten indicated their age which varied from twenty four years to fifty six years.

For the purpose of analysis, respondents' age was classified into four categories : twenty to thirty, thirty one to forty, forty one to fifty, and greater than fifty. The distribution of the sample by age categories is shown in Table 3:3.

Table 3:3 - Age distribution of respondents

Age Group	Frequency
20 to 30 years	15
31 to 40 years	66
41 to 50 years	26
51 and above	3

Education

Out of the one hundred and eleven respondents , one had a PhD degree, twelve held Masters' degree, ninety five held Bachelors' degree and one did not complete secondary school. Two respondents did not indicate their highest academic attainment.

Thus, overall, the responding managers/leaders represent a well-educated group with diverse academic background and a wide range of post-academic experiences.

Work

The original design was so made, to get as far as possible, a fair sample of each group/function of organisation/institution with equally fair cross sectional representation of, at least six, preclassified functional departments. But the design was altered by circumstances (mentioned earlier) beyond the control of the researcher. Hence the unbalanced distribution in Table 3:4; which tend to bias towards the *planning function*, with 30 representatives from this function, which is disproportionate to the relative strength of the planning staff within the surveyed institutions.

Table 3:4 - Respondents by functional area.

Functional department	Number of respondents	Percentage
Finance/Account	7	6.3
Research/Design	9	8.1
MIS	4	3.6
Marketing	32	28.8
General Management	21	18.9
Planning	30	27.0
Others	8	7.2

On the plus side, however, there are at least a few respondents from all the major functional areas except MIS which, for the responding firms, is an underdeveloped, small and often insignificant function.

Management level

A special plea had been made to the contact person in each institution to ensure representation of all management levels. On this score they complied. For the purpose of analysis, managers/leaders were re-classified into three groups out of the original seven classifications, as follows:

- Group 1 : Chairman (Cabinet Minister), President, Managing Director, or equivalent designation.
- Group 2 : General Manager, Branch/Area Manager, Senior Manager, or equivalent designation.
- Group 3 : Manager, Assistant Manager, Senior Officer, or equivalent designation.

Out of the one hundred and eleven respondents, 19% belong to Group 1, 23% belong to Group 2, and the remaining 58% belong to Group 3.

The respondents also represent a wide of range work experience. Three measures of work experience were recorded - experience in the assignment, experience in the firm/company, and total work experience. The distribution is shown in Table 3:5.

Table 3:5 - Work experience of respondents (Percent)

	Experience in assignment	Experience. in company	Total employment
<u>Number of years</u>			
0 to 3 years	49.5	15.3	7.2
4 to 6 years	37.8	15.3	8.1
7 to 9 years	8.1	28.8	18.9
10 to 12 years	4.5	24.3	23.4
13 to 15 years	-	8.1	14.4
16 to 18 years	-	5.4	12.6
19 to 21 years	-	0.9	10.8
22 to 24 years	-	1.8	4.5

Note : Numbers of years are rounded to the nearest decimal point.

Experience with diversity

Experience with diversity was operationalised through two measures : language capability and experience of living in different countries. About 50% of the respondents can communicate in two (Bahasa Malaysia and English) or more languages and the rest know only Bahasa Malaysia plus some dialects. About 17%

percent of the respondents have lived in at least one foreign country for at least one year. (Table 3:6):

Table 3:6 - Experience with diversity

	1	2	3	4	>4
Number of language					
Spoken	73 (66%)	27 (24%)	9 (8%)	2 (2%)	-
Read	56 (50%)	39 (35%)	12 (11%)	4 (4%)	-
Written	72 (65%)	30 (27%)	7 (6%)	2 (2%)	-
Number of countries lived in					
	92 (83%)	12 (11%)	4 (4%)	-	1 (2%)

Note : Numbers in the table represent number of respondents in each cell and figures in brackets show cell percentages.

As could be expected, the three measures of language skills - speaking, reading and writing abilities, are highly correlated (Table 3:7), all significant at $p < 0.001$.

Table 3:7 - Spearman correlation between measures of language skills.

	Read	Write
Speak	0.73	0.81
Read	0.00	0.74

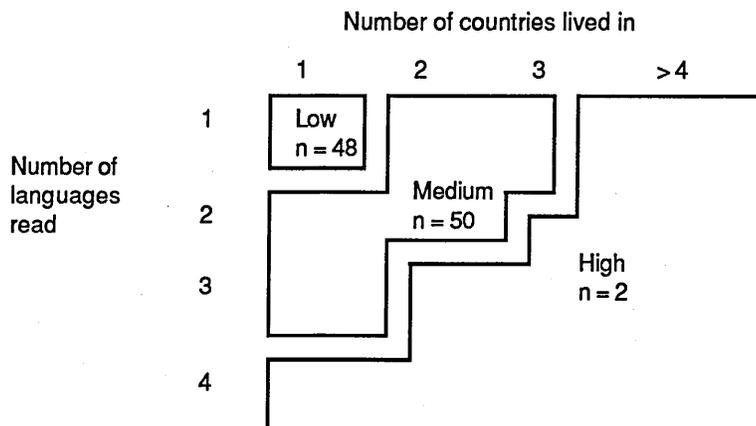
However, there is no significant correlation (even at $p = 0.25$) between language abilities and countries lived in. Thus, the two measures can be considered as orthogonal. ^{uncorrelated}

Out of the three measures of language skills, *reading ability* seems to be the most appropriate for capturing the underlying dimension relevant for this research - *i.e.*, the

ability of managers to meaningfully interpret external information and signals. Beside, in Malaysia, many managers can converse in the English language haltingly with heavy localised slang but adequately for business purposes. However, they hesitate to admit to their speaking ability in that language, for among other reasons; their very well known *sifat ketimuran* or eastern modesty. Moreover, they have been conditioned to speaking (using) the Bahasa Malaysia in conformity with the Government directive of using only the National Language in all official communication (writing and speaking), *et cetera*. *Reading ability* is relatively less ambiguous and, for these reasons, only this variable is considered as representing linguistic diversity of the respondents.

To create a composite measure of the respondents' experience with diversity, the two dimensions of *language skills* and *number of countries lived* experience were combined as shown in Figure 3:2. Respondents with a score of more than three in either dimension were considered to have high experience with diversity (n = 11). A score of more than one but less than four in either was considered to represent medium experience with diversity (n = 50). Others, i.e., those who have lived only in Malaysia and could speak only the local language and some dialects were classified as having low experience with diversity (n = 46). It has to be pointed out however that Malaysia, Indonesia and Brunei share the same national language.

Figure 3:2 - Composite measure of experience with diversity



Perception of success

Perception of success was measured across two dimensions - success within the company and success in general (see chapter two). Given the significance of academic cohorts in Malaysia, success in general was operationalised through success with regard to co-students in the last academic institution. Success within the firm was measured through age in comparison with those of peers - the justification for the measure laying in the hierarchical and seniority driven nature of Malaysian business and society.

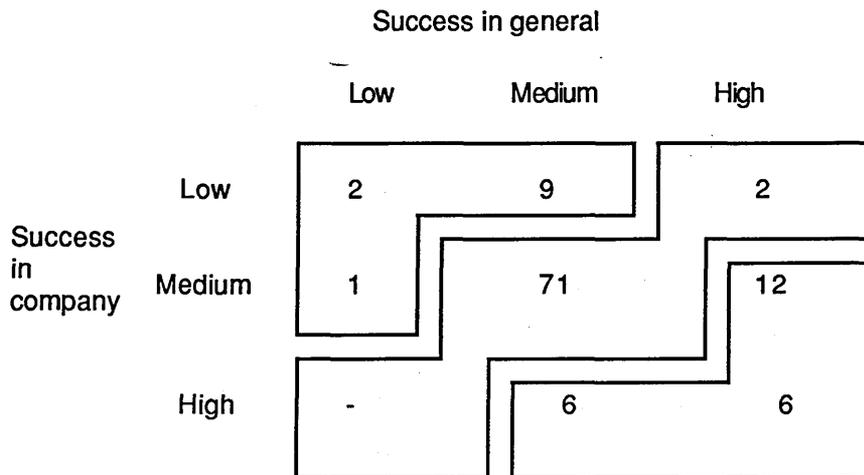
A majority of respondents felt that their success - both within the firm and in general - was about average. However a significant minority felt otherwise as can be seen from Table 3:8.

Table 3:8 - Perception of success (Percentage)

	Success within the firm	Success in general
Less successful than most	12	3
About average	77	77
More successful than most	11	18

The two measures were correlated (Spearman correlation coefficient 0.27, $p = 0.33$) and their joint distribution is shown in Figure 3:3

Figure 3:3 - Composite measure of "Perception of success" and classification of respondents



In this case again, a single composite variable was constructed to represent the respondents' perception of success by combining the two measures as shown in Figure 3:3. The distribution of this composite variable over the study sample is shown in Table 3:9.

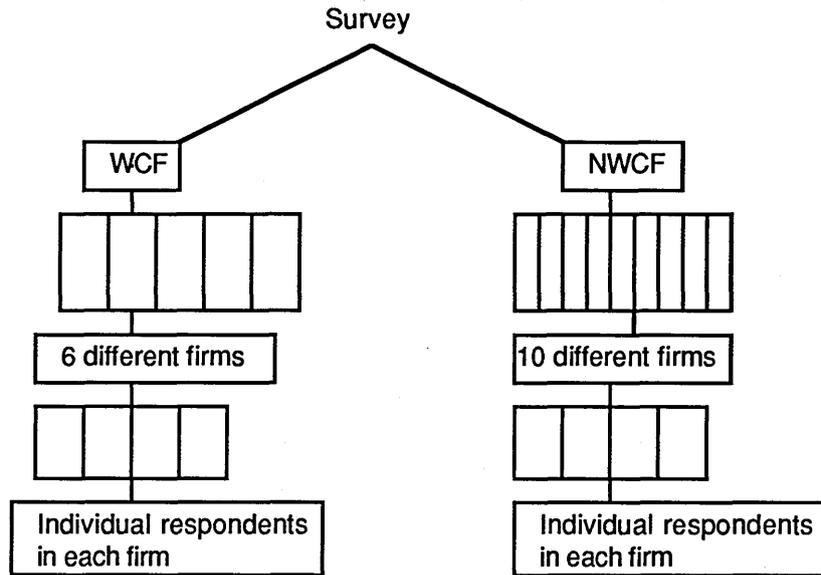
Table 3:9 - Distribution of "Perception of success"

	Frequency	Percent
Low	12	11
Medium	73	66
High	24	21
Non-response	2	2
TOTAL	109	99

UNIT AND LEVEL OF ANALYSIS

In principle, the survey followed a nested design with individual respondents belonging to groups of different companies in two broad sectors (Figure 3:4).

Figure 3:4 - Possible level of analysis



The respondents to the questionnaire were individuals and the unit of analysis for the survey was therefore the individual. However, the design raises questions about the appropriate level of analysis as suggested in the figure.

The effect of the sector (sector rather than industry appears to be a more appropriate way to distinguish between Wholly Commercial Firm [WCF], and Non-wholly Commercial Firm [NWCF]) was therefore first tested using one-way variance test on all the important research variables. These variables are defined in chapter four and five and their mention here gets the writer ahead of his story. For the time being, they may be taken as given, for the objective in this section is not to explain or defend the definition or measurement of the variables but to explore the effect on them of sectors, companies and individuals in a search to establish the appropriate level of analysis. Table 3:10 summarises the results of the variance test by sectors. Six out of the seventeen key variables are found to have a significant (at .05 level) part of their variance explained by the sector.

Next, the firm effect was investigated by carrying out similar one-way variance tests within each industry. The results are summarised in Table 3:11. Only five out of the thirty-four tests yield statistically significant results, no more than can be expected by pure chance. Further, two of these are the perception of the managers about the strategic orientation of the firm/company which only suggests that those perceptions may well reflect the realities of those strategies.

The combined information contained in these two tables justify the approach taken in this thesis of treating the individual as the appropriate level of analysis for the questionnaire data. For all the key variables, neither the sector nor the company explains a significant part of the variance. The individual, therefore, appears to be a more useful and interesting level of analysis. There are some interesting patterns at the sector level (the six variables where the results are significant) and the writer shall explore these associations as they come in the ensuing chapters but, on the overall, the data allows the treatment of all responses as separate entities, and build up an analytical model of individual level scanning behaviour.

About a fourth of the responses are from one institution. Before proceeding further it is necessary to test if these respondents are somehow very different from all the rest because that, if true, would pose a serious problem for the study. Table 3:12 shows the results of one way tests of variance for all the variable to see if respondents from that particular WCF are significantly different in their responses compared to respondent from the other WCFs. Only one out of the seventeen tests are significant showing thereby that the "five legged cow" problem does not exist for the data. Further, it also shows that the diversity in scanning behaviour and in the variables that the study explores as influencers of such behaviour are as extensive within a firm as they are across companies/firms. That further strengthens the argument for considering the individual respondents rather than the companies as the proper level of analysis.

Table 3:10 - One-way variance tests : sectors

<u>SCANNING MEASURES</u>	<u>F RATIO</u>	<u>F PROB'LY</u>
1. Total scanning time	1.606	0.22
2. Percent scanning time on competitive factor	5.336	0.02
3. Percent scanning time on market factor	0.003	0.95
4. Percent scanning time on technology factor	21.084	0.00
5. Percent scanning time on regulatory factor	2.533	0.11
6. Percent scanning time on resource factor	0.279	0.60
7. Percent scanning time on broad issues	0.307	0.58
8. Usage of external sources	1.012	0.32
9. Usage of personal sources	5.137	0.03
<u>TASK MEASURE</u>		
10. Extent of structure in task	0.555	0.46
<u>ENVIRONMENT MEASURES</u>		
11. Environmental predictability	0.662	0.42
12. Environmental homogeneity	17.319	0.00
<u>PERCEIVED STRATEGIC ORIENTATION OF FIRM</u>		
13. Analytical orientation	0.395	0.53
14. Attitude toward risk	5.108	0.03
<u>INDIVIDUAL CHARACTERISTICS</u>		
15. Entrepreneurial orientation	9.222	0.00
16. Perception of success	0.930	0.34
17. Experience with diversity	0.560	0.46

Table 3:11 - One way variance tests : companies within sectors

<u>Scanning measures</u>	WCF		NWCF	
	F Ratio	F Prob.	F Ratio	F Prob.
1. Total scanning time	2.541	0.03	0.381	0.55
2. Percent scanning time on competitive factor	1.363	0.25	0.015	0.90
3. Percent scanning time on market factor	1.302	0.27	0.288	0.60
4. Percent scanning time on technology factor	6.060	0.00	0.440	0.52
5. Percent scanning time on regulatory factor	1.127	0.36	0.337	0.57
6. Percent scanning time on resource factor	0.731	0.63	0.167	0.69
7. Percent scanning time on broad issues	0.641	0.70	1.405	0.26
8. Usage of external sources	1.365	0.23	0.318	0.58
<u>Task measure</u>				
10. Extent of structure in task	0.288	0.94	0.000	1.00
<u>Environment measures</u>				
11. Environmental predictability	0.860	0.53	0.035	0.86
12. Environmental homogeneity	2.277	0.05	0.588	0.46
<u>Perceived strategic orientation of firm</u>				
13. Analytical orientation	2.735	0.02	1.623	0.23
14. Attitude toward risk	0.728	0.63	5.000	0.05
<u>Individual characteristics</u>				
15. Entrepreneurial orientation	3.088	0.02	4.310	0.06
16. Perception of success	0.200	0.66	0.200	0.66
17. Experience with diversity	1.216	0.30	1.216	0.30

Table 3:12 - One way variance test -XYZ Berhad versus other WCFs

<u>Scanning measures</u>	<u>F Ratio</u>	<u>F Probability</u>
1. Total scanning time	0.526	0.47
2. Percent scanning time on competitive factor	0.676	0.41
3. Percent scanning time on market factor	4.070	0.05
4. Percent scanning time on technology factor	0.115	0.74
5. Percent scanning time on regulatory factor	3.961	0.05
6. Percent scanning time on resource factor	0.931	0.34
7. Percent scanning time on broad issues	0.090	0.77
8. Usage of external sources	✓ 7.332	0.01
9. Usage of personal sources	0.009	0.93
<u>Task measures</u>		
10. Extent of structure in task	0.807	0.37
<u>Environment measures</u>		
11. Environmental predictability	0.973	0.33
12. Environmental homogeneity	0.706	0.40
<u>Perceived strategic orientation of company</u>		
13. Analytical orientation	0.973	0.33
14. Attitude toward risk	1.080	0.30
<u>Individual characteristics</u>		
15. Entrepreneurial orientation	0.002	0.96
16. Perception of success	0.021	0.89
17. Experience with diversity	0.249	0.62

Chapter Four
The nature of managerial work in
Malaysia

CHAPTER FOUR

THE NATURE OF MANAGERIAL WORK IN MALAYSIA

The preceding chapter describes the demographics of the research sample: managers by their age, education, experience, seniority, and a host of other personal and organisationally related attributes. These are the individual level variables that, as in the context of the conceptual framework presented in chapter two, are expected to influence the scanning behaviour of managers. The nature and extent of these influences are explored later in this thesis.

Following the arguments of Mintzberg (1973), scanning, however, is not something that managers *do*, just as planning and coordinating are not managerial *activities*. Managers read letters and journals/magazines, they write memos, attend meetings, visit plants and customers, and so on. In carrying out these activities, they fulfill the bulk of their roles, and, through these activities, they achieve their purposes including that of acquiring external information. Before proceeding to an analysis of the scanning data, therefore, it may be useful to provide a description of the responding managers, in terms of their managerial activities, so as to be able to obtain a functional view of their work which can be related to the findings about their scanning behaviour.

One of the most important conclusion of Mintzberg's highly acclaimed doctoral thesis (1973) is that, "manager's job are remarkably alike. The work of foremen, presidents, government administrators, and other managers can be described in terms of ten basic roles and six sets of working characteristics." An extension of this argument is therefore that the job of managers are similar irrespective of whether the organisation they belong to are British, Japanese, American or any other nationality.

The first half of this chapter, explores the nature of managerial work in Malaysia and looks for the similarities suggested by Mintzberg. Environmental scanning however, is

a *boundary spanning* activity and can be carried out only through interactions with the world outside the firm. The overall nature of managerial work in Malaysia is important to establish a comparative framework within which they could be related to the research sample of other populations of interest. Even more useful would be a comparison that focuses on this *boundary spanning* component of the managerial function. Who, in the Malaysian organisations, deal with the outside world? How does their behaviour compare with the pattern in other, for example Japanese companies? Answers to these questions make the comparison more relevant and are suggested in the second half of this chapter.

ACTIVITIES OF MALAYSIAN MANAGERS

Following the categorisation of Mintzberg, the distribution of work time for the respondents in terms of six activities are identified as follows: desk work, scheduled meetings, unscheduled meetings, telephone calls, tours, and others.

Desk work

Table 4:1 shows the distribution of percentage of total worktime devoted by the sample Malaysian managers to desk work. On the average, this activity accounts for work 50% of total worktime.

Table 4:1 – Time spent on deskwork : distribution of respondents

Percentage of total work time devoted to deskwork	Frequency
0 to 15	5
16 to 30	10
31 to 45	32
46 to 60	17
61 to 75	30
76 to 100	17
Total	111

The hierarchical level of manager makes a significant (significant at 0.05) difference to the relative share of desk work. The more senior the manager, the lesser is the time spent on desk work (Table 4:2)

Table 4:2 - Effect of management groups on time spent on deskwork.

	Percentage of total work time spent on deskwork.
Group 1	33%
Group 2	46%
Group 3	58 %

None of the other attributes such as education, age or departmental affiliation have any significant effect on the time spent by managers on desk work.

Scheduled and unscheduled meetings.

On the average, the sampled managers spent about 16% of their work time in attending scheduled meetings, the range varying from 0 to 40%. As can be expected, the higher the group/level of manager, the greater the proportion of time spent in scheduled meetings (Table 4:3).

Here again, management group/level is the only variable that differentiated ($p < 0.05$) significantly the sample. Group/level 1 and 2 managers spend about 15% of their work time attending unscheduled meetings, while group/level 3 managers spend relatively less time on this activity. The differences, however, are not statistically significant and, on the average, this activity occupies about 10% of the work time on the sampled group.

Table 4:3 - Effect of management level on time spent in scheduled meetings

	Percentage of total work time spent in scheduled meetings
Level 1 managers	26%
Level 2 managers	17%
Level 3 managers	12%
Average	16%

Tours.

Senior group/level Malaysian managers spend significantly ($p < 0.05$) more time on tour than do their relatively junior colleagues (Table 4:4).

Table 4:4 - Time spent on tour

	Percent of total work time spent on tour
Level 1 managers	14%
Level 2 managers	9%
Level 3 managers	6%
Average	8%

This confirms expectations, managers in the *Marketing* and *General management* functions tour more than those in *Finance*, *Planning* and *Research and Development*.

As can be seen from Table 4:5, the relationship is not due to any correlation in the sample between functions and levels.

Table 4:5 - Joint effect of function and level on percentage of total work time spent on tours

Functional area		Managers hierarchial level			Sample average
		Level 1	Level 2	Level 3	
Marketing	%	22	10	7	9
Finance	%	10	6	4	6
Planning	%	9	13	5	6
Research	%	13	6	2	6
Gen. Mgt.	%	16	9	4	11
Others	%	30	-	3	10
Aggregate	%	14	9	6	8

Table 4:6 summarises the preceding analysis and compares the overall pattern of work time allocation by managers at different hierarchical levels. This table shows that the nature of managerial work is indeed different at various levels. Top managers spend, relatively much less time on desk work and much more time in meetings and tours - in dealing with and through people.

Table 4:6 - Work time allocation at different management levels

Activity	% of total worktime spent by		
	Top managers (n = 27)	Senior managers (n = 26)	Middle/Junior managers (n = 64)
Deskwork	33	46	58
Scheduled meetings	26	17	12
Unscheduled (do)	15	15	11
Telephone calls	9	8	8
Tours	14	9	6
Others	3	5	5

The data shows a clear pattern and consistency in the transition of managerial work from the bottom, through the middle, to the top of the organisation.

COMPARISON WITH MINTZBERG'S STUDY

In Table 4:7, the findings (results) of this study are compared with Mintzberg's allocation of work time of top American managers.

Table 4:7 - Comparison with findings of Mintzberg (1973)

<u>Activity</u>	% Worktime spent by US top managers (Mintzberg)	% Worktime spent by Malaysian	% Worktime spent by Malaysian managers (average)
Deskwork	22	32	50
Scheduled meetings	59	26	16
Unscheduled (do)	10	15	13
Telephone calls	6	9	8
Tours	3	14	8

At first sight, it appears that the time allocation by U.S. top managers is quite different from those of Malaysian top managers. However, one must assess whether this difference is to be ascribed to the fact of the managers, belonging to different countries, culture or "milieu of business" Longton and Stening (1988, p92), or to other aspects of the two studies including the choice of samples.

In this study, all the respondents work in the five groups of firms (see the grouping in chapter three) with *partimomial milieu* merging into *patron-client relationship* type of organisational climate, Longton and Stening (1988). The sample in the Mintzberg study, on the other hand, involved five managers only - three in commercial organisations, and two in non-profit organisations : one a superintendent of schools and the other the administrator of urban hospital. If Mintzberg's data is split into two

categories - top managers in commercial and non-commercial organisation - the first category becomes more directly comparable with most of the sample in this study, while the remaining will be almost if not totally identical. This comparison is shown in Table 4:8. For each category of work, the difference in time allocation between U.S. and Malaysian top managers is reduced if the business organisations in Mintzberg's sample is the only one considered.

The table also highlights the considerable differences in time allocation between two CEO's of non-commercial organisations and the three business CEO's included in Mintzberg's study.

Table 4:8 - Work time allocations by top managers : comparison with Mintzberg's findings

	% of total worktime spent by U.S. top managers		
	Commercial organisations	Non-profit organisations	Malaysian top managers
Desk work	25	17	32
Scheduled meetings	52	69	26
Unscheduled meetings	13	6	15
Telephone calls	6	6	9
Tours	4	1	14

However, even for business firms, some differences remain in the observed work characteristics of American and Malaysian top managers. The American managers spend more time in meetings while the Malaysians spend more time in deskwork and tours. The greater time for touring in the Malaysian sample is easily explained: as mentioned earlier, the managers do not possess equipment of modern communication

as sophisticated and up-to-date as their Western counterparts, additionally the rapport between and among staff is seen as more cohesive. Operations are also very wide spread all over the 13 states and among the ASEAN countries. Thus, the Malaysian managers need more time for travel, both because of the geographical diversity in their business and also because of the larger distances involved (East and West Malaysia is separated by the South China Sea, refer to the map enclosed), additionally the land infrastructure is not as modern. The differences in time allocation for desk work and meetings arguably represents a greater preference in Malaysia for internal communication in the written rather than the verbal form, compared with the U.S. study.

This discussion on the differences should not divert attention from the fact that the similarities are more significant. Both groups of top managers spend most of their time in meetings. Desk work, for both, take the next largest share of time. And, except for time in meetings, the differences between Malaysian and American business managers is no more than those between American managers of commercial and non-commercial firms.

DEALING WITH THE OUTSIDE WORLD

There is a widely shared stereotype in the world of business which portrays Western top managers as the key persons interfacing between the organisations and the outside world, and the Eastern top managers, in contrast, as secluded semi-recluse who keep their distances from the actual operations of their firms and devote most of their time to building and supporting internal structures, values, and maintaining organisational harmony. This is implicit in books like **The Art of Japanese Management** (Pascale and Athos, 1981) where, it is argued, : the Japanese top manager devotes his attention to maintaining "wa", *i.e.*, group harmony while the Western image of a manager is more energetic and kinetic, (p179). The Western organisation is seen as a pyramid with the

top manager at the apex, which is also the point with maximum exposure to the outside world. The Eastern organisation, on the other hand, is seen as a sphere, with the top manager at the centre, creating and strengthening integrative centripetal forces.

This view, if true, would make the scanning task very different between the East and the West. In the West, the top and middle managers would be the chief scanners for they have the greatest exposure to the environment. In the East, the lower level managers would play a far more important role in scanning since they, rather than the top management, are expected to deal with the outside world and act as the organisational sensors. It is, therefore, interesting to explore whether indeed there are such differences in the way Eastern (say Malaysian) and Western (say, Scottish) organisations interact with the environment. In particular, it would be desirable to compare the Malaysian managers in this study sample with comparable U.S. (in Mintzberg's) managers to see if there are fundamental differences with respect to who, in the organisation, deals with the outside world. Fortunately, Mintzberg has analysed the activity pattern of managers in his sample in terms of dealing with insiders and outsiders and it is therefore possible to make such a comparison.

The managers in this study sample spend, on the average, 23% of their total work time in contact with outsiders. This time is spent in their base and while on tours; during meetings, (scheduled and unscheduled) and over the telephone - the average contribution of the different activities is shown in Table 4:9.

*Table 4:9 - Worktime spent with insiders and outsiders
(Percentage)*

Distribution of total work time			
	With inside	With outsiders	Total
Scheduled meetings	9	7	16
Unscheduled meetings	7	6	13
Telephone calls	3	5	8
Tours	3	5	8
Sub total	22	23	45
Deskwork			50
Others			5
Total			100

Table 4:10 breaks down the percentage of total work time spent with outsiders by management levels/groups. Level 1 and Level 2 managers are found to spend much more time with outsiders than Level 3 managers. In other words, it is the senior managers and not their junior colleagues who, in Malaysia, form the chief link between the organisation and its environment. They spend about 30% of their time with outsiders; about twice as much as do the junior managers.

*Table 4:10 - Share of work time spent with outsiders -
by management levels*

% of worktime spent with outsiders			
	Level 1	Level 2	Level 3
Scheduled meetings	12	10	4
Unscheduled meetings	6	7	5
Telephone calls	5	6	4
Tours	7	6	3
Total with outsiders	29	29	16

This data is in sharp contrast to the "recluse" model of the Eastern top manager.

In the Mintzberg study, the U.S. top managers were found to spend about 31% of their total work time with outsiders. If this is differentiated or compared between commercial and non-commercial executives, the comparisons become even clearer (Table 4:11).

Table 4:11 - Time spent with outsiders - U.S. and Malaysian top managers compared

Malaysian top managers	U.S. top managers (commercial)	U.S. top managers (non-commercial)	U.S. top managers (aggregate)
29	36	25	31

The differences in Table 4:11 are not significant, statistically or otherwise. It does tend to show that the boundary between the organisation and the environment, in both the U.S. and Malaysia, is spanned by managers at a comparable level in the organisation. Or, more accurately, the activities of the top managers in Malaysia, at least with respect to dealing with the outside world, are not dissimilar in volume to what has been observed for similar level managers in the United States.

The main point to be stressed in this chapter is that the nature of managerial activity, and particularly, the managerial activity of dealing with the outside world is no different in Malaysia than it is in the United States (and, by implication, elsewhere in the West). In chapter three, it was argued that this underlying similarity suggests that the analysis of individual and organisational level scanning behaviour that follows (in chapters ahead) may be more broadly generalisable than can be claimed technically from the sample of this research. In chapter six, comparison of specific aspects of scanning behaviour will be made, such as the relative importance of factors and the relative usage of sources it will attempt to show that there are no significant differences between American and Malaysian managers in terms of those behaviours. At a more theoretical

level, it will also be shown that the effect of environmental characteristics, like heterogeneity and predictability, on such scanning characteristics are also similar for American and Malaysian managers. Individually, these similarities are interesting; collectively they add considerable strength to the claim in this thesis for a wider external validity for the results of the survey.

Chapter Five

The context of scanning

CHAPTER FIVE

THE CONTEXT OF SCANNING

In the introductory chapter, it was mentioned that most past research on scanning has been descriptive rather than analytical. What kinds of information do managers collect? What sources do they use? How are they acquired? These had been the principal questions addressed by past researchers on scanning practices of managers. The framework for such descriptive analysis was formulated by Aguilar (1967). Follow up studies by Keegan (1967), Collings (1968) and Kefalas and Schoderbek (1973) have, in essence, replicated his study in different industries. At the analytical level, these studies have tried to relate scanning activity of managers to their functional areas, hierarchical levels, and to the size of their organisations. Kefalas and Schoderbek had included, over and above these variables, the dynamism of the organisation's environment as an additional explanatory variable. The overall findings of this stream of research has been inconclusive, for no clear pattern of associations have been observed.

Hambrick (1982), noting the failure of these efforts in explaining variations in executive scanning activities, had taken a major conceptual leap by trying to relate individual scanning behaviour with strategies of the organisations the managers belong to. Hambrick was perhaps the first scholar who tried to build up a more analytical understanding of managerial scanning by developing and testing a set of propositions that were firmly rooted in organisation and management theories. While the propositions, by themselves were not unambiguously supported by his data, he must be given the credit for taking scanning research from the largely descriptive to a more analytical level. In a way, this thesis may be seen as an effort to carry forward the work initiated by him.

However, Hambrick attempted to explain variations in individual level scanning through only one variable - the strategic orientation of the firm. In contrast, it is the focus and view in this thesis that individual behaviour in organisations is influenced by a whole range of factors and that no meaningful or significant explanation of such behaviour is possible unless one's construct matches the complexity of the phenomenon one wishes to explain. Besides, the influencing factors, as normatively suggested by Daft and Weick (1984), may also be interactive and their joint effects may indeed be very different from their main effects. This would mean that limiting attention to the main effect of just one out of many explanatory variables may not only be inadequate but also incorrect. Thus, the commencing point here is a conceptual framework that is more complex and inclusive than Hambrick's. The results, the writer submits, justify the added complexity.

The framework, in summary form, has been introduced in chapter two. In chapter three, the operationalisation and measurement of the individual influencing variable were explained. In this chapter, this writer attempts the same as in chapter three for the organisational and environmental attributes which, as proposed in the framework, are expected to affect the scanning behaviour of managers.

A persistent problem in the field of organisation theory is the diversity of the constructs and measures that exist for almost all variables. Thus, the first task to be addressed here is to review the different constructs that have been proposed for each of the variables and to select the appropriate operationalisation scheme that best serves the objectives of this study. Then the writer dips into the data to test the constructs and often the data suggests changes and simplifications, usually by reducing the number of indicators for complex variables. Both theory and data to construct and test appropriate scales, are used. In other words, for each variable, concepts and data are used interactively to arrive at the final measures.

Finally, these influencing variables are mutually interactive. The ultimate objective is to build up a multivariate causal model for explaining scanning behaviour in terms of an appropriate parsimonious set of these variables. To do so, it is necessary to understand the nature of the interactions that exist among these variables and this is another task that is addressed in this chapter.

ENVIRONMENTAL CHARACTERISTICS

As discussed briefly in chapter two, almost all authors studying scanning behaviour of managers have suggested that the characteristics of the environment can be an important determinant of such behaviour. Aguilar (1967) and Collings (1968) specifically controlled the environment by limiting their studies to individual industries - the chemical industry, in the case of Aguilar, the financial services industry in the case of Collings. Kefalas and Schoderbek (1973) included two industries in their sample - the "stable" meat packing business and the "dynamic" farm equipment business, but failed to detect any significant difference in scanning behaviour of managers in the two environments. However, there has been no effort so far to take the search for an environment-scanning link to a deeper theoretical level, or to connect it to the vast amount of research conducted by organisation theorists on organisation-environment interdependencies.

Dimensions of the environment

In organisation theory, the environment is conceived as a residual - as everything that lies outside the organisation's boundary. This has led to a two-fold measurement problem. First, definition of the boundary has never been easy, for "organisations are open social systems, they are constantly changing, and their boundaries fluctuate accordingly" (Miles, Snow and Pfeffer 1974, p 248). Second, even assuming that such a boundary could be identified, it has not been clear as to how the environment - *i.e.*, "everything which is outside the organisation" - could be described in a way that

is analytically useful.

Early attempts (Merton, 1957; Gross, Mason and McEachern, 1958) have sought to specify an organisation's environment by describing all its elements. This, as pointed out by Dill (1962), could never be possible for modern, large organisations facing highly complex environments. He, therefore, suggested an alternative approach for describing the environment not in terms of its absolute characteristics but in terms of its effects on the organisation. Many of the currently popular typologies of the environment have emerged following this suggestion.

Most of these typologies attempt to describe the environment in terms of two dimensions of the current state and the rate of change. Thompson (1967) analysed environmental uncertainty as the net effect of the extent of homogeneity and stability. Lawrence and Lorsch (1967) adopted a four-cell typology of two states of diversity (high, low) and two states of stability (high, low). Duncan (1972) has suggested that environmental complexity has the dimensions of simple-complex (number of factors considered in decision making and their degree of similarity) and static-dynamic (degree to which these factors change).

Perhaps the most comprehensive as well as the most complex typology of organisational environments has been provided by Jurkovich (1974) in his sixty-four cells classification that includes four dimensions of general characteristics and two dimensions of change rate.

Objective and subjective measures of environments

In the environmental literature an unresolved debate has focused around the choice of objective versus subjective measures of environmental attributes. The paper by Pfeffer

and Leblebici (1973) is an example of studies that have operationalised the environment through "objective" measures like industry concentration and average debt-to-equity ratio. On the other hand, Duncan (1972) described the environment in terms of "subjective" perceptions of the respondents along a number of dimensions. Some authors like Pennings (1975) have used both the methods, measuring on the one hand, participant's perceptions of environmental instability, uncertainty, and the like, and, on the other, certain objective attributes like investment patterns in the industry and customer characteristics.

As pointed out by Downey and Ireland (1979), this objective-subjective categorisation has had some dysfunctional effects on organisation research. First, it has created a preference for objective measures for no other reason except that the label suggests them to be more "scientific" and therefore, more appropriate for academic inquiry. Second, it has equated subjective measures with measures of perception without distinguishing between subjectivity on the part of the researcher and subjectivity on the part of the respondents. This has been unfortunate for "the objectivity that is desired in scientific inquiry refers to objectivity on the part of the researcher. Subjectivity behaviour on the part of those being studied, however, may well be a legitimate topic for scientific inquiry". (Downey and Ireland, 1979, p632).

In the ultimate analysis, appropriateness of a measure depends on the phenomenon under investigation. In this study the purpose of including environmental characteristics as variables of interest is to investigate the association, if any, between those variables and the scanning behaviour of managers. The underlying hypothesis is that the nature of the environment influences the kind of information that is perceived as necessary for managing the affairs of an organisation and thereby affect managerial interest in, and effort for collecting such information. To the extent that an individual's behaviour cannot be affected by what is not known by him, the writer of this thesis

argues that it is the manager's perceptions of the environment rather than any notion of an "objective reality" that influence the way they monitor the environment. Following the arguments of Dill (1962), Weick (1969), and Starbuck (1976), it is the perception of the environment that drives the attention and interpretation process that are collectively labelled as scanning behaviour.

In this study, therefore, operationalisation and measurement of the environment are based on managerial perceptions and not on any "objective" measures - quantitative or qualitative.

Measurement of Environmental Attributes.

In measuring environmental characteristics, this thesis has adopted both the categorisation and the questions used by Miller and Friesen (1983). There are two advantages of such a direct adoption. First, the theoretical construct proposed by the authors is a synthesis of existing findings in the field of organisation - environment research. It is both rich and relatively parsimonious. Second, this study, in some ways, is an extension of theirs. While they tried to establish a link between environment and strategy, this study explores the same link but in a more complex way, positing scanning as an intermediary variable. Using the same construct and the same questions, permits a direct comparison of the findings, thereby offering the benefits of research replication and cumulativeness.

Following these authors, this study has measured the respondents' perceptions about their business environment along three dimensions - *dynamism*, *hostility*, and *heterogeneity*. *Dynamism* refers to the rate of change or innovation in the industry and the uncertainty or unpredictability of the actions of competitors and customers. It is therefore not unlike the measure of uncertainty used by Thompson (1967) and Lawrence and Lorsch (1967). *Hostility*, the second dimension, measures the extent of environmental munificence, and can be thought of as the reverse of environmental

benevolence. It reflects the lack of slack available in the organisation's environment and is measured in terms of hostility of competitors and the suddenness of the industry's upswing and downswing. Finally, *heterogeneity* is a measure of environmental complexity and reflects variations in the output markets that require diversity in the throughput process (Khandwalla, 1972). It is measured in terms of diversity in production methods and marketing tactics required to effectively cater to the needs of different customers.

The Data

Table 5:1 shows the non-parametric correlations (Spearman coefficients) between responses to the six questions (see appendix) that attempted to measure the three environmental dimensions. It can be seen that one of the hostility measures, predictability of industry upswings and downswings, is highly correlated with the measures of environmental *dynamism*. Similarly, *hostility* of competitors - the other measure of the same attribute - is highly correlated with the measure for environmental *heterogeneity*. This suggests that *hostility* is not seen by the respondents as an independent attribute of the environment.

Table 5:1 - Correlations between different indicators of the environment

	Predictability of competitors	Predictability of customers	New product and process innovation	Predictability of industry upswings and downswings	Hostility of competitors
Diversity in production and marketing methods	- 0.01 (n = 110)	0.18 (n = 110)	0.32 ** (n = 111)	0.07 (n = 110)	0.17 (n = 110)
Hostility of competitors	0.02 (n = 111)	0.05 (n = 111)	0.12 (n = 111)	0.11 (n = 111)	
Predictability of industry upswings and downswings	0.40 ** (n = 111)	0.30 ** (n = 111)	0.14 (n = 110)		
New product and process innovations	0.09 (n = 110)	0.19 (n = 110)			
Predictability of customers	0.45 ** (n = 111)				

Note : ** significant at 0.001 (no other correlation significant at 0.01).

The picture becomes clearer when the response are factor analysed (Principal Component Analysis with Varimax Rotation) : only two clear and distinct underlying factor emerge (Table 5:2).

Table 5:2 - Measurement of environmental attributes factor loading

	Factor 1	Factor 2
Predictability of competitors	0.75	
Predictability of customers needs	0.61	
Predictability of industry upswings and downswings	0.50	
Diversity in methods of production and marketing		0.56
Rate of new products and process innovation		0.42

The first factor, clearly includes three components of environmental predictability, *viz.*, predictability of competitors, customers, and business cycles. The two components of the second factor, similarly refer to aspects of *heterogeneity, i.e.*, diversity of products, processes and techniques.

In effect, therefore, even though the writer starts with a different and more complex construct of the environment, the writer is led back to the conceptualisation of Lawrence and Lorsch (1967) because the two dimensions of predictability and heterogeneity correspond almost exactly to the typology proposed by these authors.

Construction of Scales:

Given that no single variable was split between the two factors, it was felt that subsequent analysis would be more meaningful if additive scales built on the measured variables is used instead of directly using the factors themselves.

A scale for environmental predictability (PRED) was constructed by adding the scores of the three variables included in the first factor. The scale was found to have satisfactory reliability (Cronbaches' alpha of 0.667).

The scale had a minimum value of three and a maximum value of fifteen and had a near-normal distribution within that range. Given the nature of the inquiry, a continuous scale with twelve different values had its own used but it was felt that a simpler two scale categorisation would also be useful, particularly for simple and robust statistical analysis. To serve this purpose, one more conversion was carried out by splitting the scale so as to segregate the respondents into two groups. The first group, with a PRED score less than or equal to eight, consider their environments to be relatively predictable; the others, with a PRED score greater than eight, find their environments as relatively unpredictable.

A scale was similarly constructed for environmental heterogeneity (HETROGEN) by adding the two variables loaded on the second factor. The scale had a Cronbach's alpha of 0.526 and was therefore found to have acceptable reliability. For the same reasons as in the case of environmental predictability, a simple two state measure of environmental heterogeneity also was constructed by bifurcating or forking the scale so as to split the sample into two roughly equal parts. Those scoring up to seven on the scale were considered to find their environments to be relatively *homogeneous*, and those scoring above seven were considered as facing a relatively *heterogeneous* environment.

Associations between Environmental Characteristics and other Variables.

It is observed that more wholly commercial firms' (WCF) managers find their environments to be relatively predictable and *homogeneous* compared to managers in other types [that is, not wholly commercial firms (NWCF)]. (Tables 5:3 and 5:4).

*Table 5:3 - Perception of environmental heterogeneity :
WCF and NWCF*

Environment	Wholly commercial institution (WCF)	Non-wholly commercial institution (NWCF)
Homogeneous	35	23
Heterogeneous	23	29

The perception of greater *homogeneity* is perhaps more easily understood. After all, WCF do not carry out many functions like NWCF while all the NWCF in the sample internalise all usual business functions. The greater range of activities clearly increase the number of different environmental sectors that the NWCF are exposed to and can therefore be expected to enhance the perception of environmental *heterogeneity* among their managers.

*Table 5:4 - Perception of environmental predictability :
WCF and NWCF*

Environment	WCF	NWCF
Predictable	34	22
Unpredictable	25	30
Significant at 0.50		

The perception of greater environmental predictability among WCF managers appears counter intuitive at first sight. The WCF deal with many more products and in many more markets and thus presumably face a greater amount of demand uncertainty.

The popular stereotype of WCF managers depict them as "light-footed wheeler-dealers", deftly bringing together buyers and suppliers in a highly uncertain and unpredictable market place. How then can they perceive the environment to be more predictable than managers in stodgy NWCF firms?

One probable explanation of this finding may lie in the nature of risks WCF and NWCF firm carry. As suggested in chapter three, WCF pass on most long and medium term risks of a business to their suppliers and internalise only very short term risks. Thus, for a given business, their need for long term predictions is low.

They move in and out of products and markets with greater ease, for they face much lower entry and exit barriers than the NWCF. They can, therefore, be much less sensitive to the long term predictability of a business and this lack of attention and sensitivity to the long and medium terms may account for the perception of greater predictability on the part of WCF managers.

Management level was the only other variable that was found to have a significant influence on managers' perceptions about their environments. It was observed that the more senior the manager, the more *heterogeneous* he perceived the environment to be (Table 5:5). There was, however, no significant association between management level and perception of environment predictability. This finding is not very surprising. The higher up one is on the management ladder the greater the number of factors that one must consider in connection with any issue.

Table 5:5 - Effect of management level on perceived environmental heterogeneity

<u>Management level</u>	<u>Environment</u>	
	<u>Homogeneous</u>	<u>Heterogeneous</u>
Top	6	15
Senior/middle	15	10
Junior	37	27

Significant at 0.05

There is less and ultimately no differentiation, in the sense of Lawrence and Lorsch (1967), as one moves up the organisational hierarchy. The broader perspective of top managers contribute to their perception of greater environmental diversity and heterogeneity. Predictability, on the other hand, is relatively a less subjective factor. One builds up a notion of predictability based on past experiences which are often matters of fact rather than of judgment. This perception is therefore not systematically affected by where one is placed in the management hierarchy.

It has been argued earlier in this thesis that the systematic variation in perception of environmental heterogeneity across management hierarchy is, from a practical point of view, not unexpected. This finding however, carries important implications for theory. In organisational research, environment has always been associated with the

organisation - it has been primarily considered as a variable applicable at the organisational level of analysis. Most authors operationalising environment through the perceptions of organisational members typically measure such perceptions on the part of a few members of the organisation and aggregate the measures to arrive at a description of the organisation's environment (e.g., Miller and Friesen, 1983).

The key contribution of Lawrence and Lorsch (1967) to organisation theory was the insight that different organisational sub-units face different environmental characteristics and, therefore, need different structural mechanisms for effective coping. The data in this thesis suggests a further possibility that managers at different organisational level face what can only be described as different environments. In other words, the subjective environment differs not only across functions but also across levels. If that is true, basic questions are raised about whether environment, or at least perceptual measures of the environment, is an appropriate concept for analysis at the organisational level of inquiry.

TASK CHARACTERISTICS

The expectation of a link between task characteristics and scanning behaviour of managers arise from the empirical evidence that the nature of the task represents one source of variation in managerial information processing requirements (Bavelas, 1950; Becker and Baloff, 1969; Tushman, 1978). When tasks are non-routine or highly complex, participants face high uncertainty and therefore need greater amounts of information for uncertainty reduction and effective performance. This relationship, to quote Daft and Macintosh (1981), "is the basis for theories that relate task uncertainty to structure". (Galbraith, 1977; Tushman and Nadler, 1978) and is supported by the empirical literature (Tushman, 1978, 1979; Van de Ven and Ferry, 1980). Scanning is one of the mechanisms available to managers for meeting information needs. Therefore, when managerial tasks are complex and information needs are high, one can

expect more extensive scanning. That is the rationale for inducing task characteristics as a variable of interest in this study.

Perrow (1967) had originally proposed a description of tasks based on a routine-nonroutine dimension. Subsequently, researchers have suggested that the routineness or otherwise of a task is an aggregation of two underlying task characteristics : task variety and task analysability (Daft and Macintosh). Task variety is the frequency of unexpected or novel events : low variety means that participants can predict problems and activities in advance, high variety means that they cannot. Task analysability, on the other hand, concerns how individuals respond to problems that arise. It refers to the ease with which alternative course of actions and their associated costs, benefits and outcomes, can be determined.

However, this conceptualisation of task structure is based on only the demand side of the task in terms of information and does not consider the supply side. For certain tasks information needs may be high but, at the same time, required information may be easily available. In some cases, the problem may not be one of information availability but one of information ambiguity or equivocality (Weick, 1979). As found by Daft and Macintosh, the relationship between task uncertainty and information processing may be much more complex than hitherto assumed. Given the complexity of the relationship, it may be desirable to include the availability and equivocality of information as additional components of a more broadly defined conceptualisation of task characteristics. There is no suggestion of the components being unrelated, however, and the principal advantage of including the additional components is to provide a greater opportunity for being informed by the data about appropriateness of constructs instead of starting with a narrower definition that rules out such possibility.

Measurement and scaling

For measurement task characteristics, the writer used questions developed and reported by Daft and Macintosh. However, not all the questions in their instrument was used but, for each variable, only two questions that had the highest factor coefficients in their analysis was selected. (see questionnaire in the appendix).

Responses on all the task characteristics questions were factor analysed using the principal components methods. The analysis extracted only one factor and eigenvalue of 1.34 that explained approximately 27% of the variance. Only three items had significant factor coefficient (see Table 5:6).

The extracted factor suggests a task description along the structured-unstructured dimension. The need of extensive and demanding search for solution (*i.e.*, beyond the problemistic search of Cyert and March, 1963), the need for experience and training (reflecting difficulty in applying standard operating procedures), and high equivocality in available information - the three induced items, are all the classic components of unstructured tasks. Accordingly, these three items were combined and the additive scale labelled "STRUCTURE" that was subsequently used in the analysis as the only measure of the task characteristics of the respondents. Cornbatche's alpa for the scale was 0.62 and, being above 0.5, suggested acceptable scale reliability.

Table 5:6 - Task structure : extracted factor

	Factor 1
Task require lots of experience and training	0.83
Task require extensive and demanding search for solutions	0.55
Available information can be interpreted in several ways and can lead to different but acceptable decisions	0.43

Further, as in the case of the scales measuring environmental characteristics, this scale was also collapsed into two state variables. Respondents with a scale score of up to ten were considered as carrying out structured tasks; those with scale score above ten were considered to be engaged in unstructured tasks.

Associations with other variables

Perceived task structure was found to have no statistically significant association (at 0.05 level) with industry, firm/company or environmental characteristics. It also had no significant association with management level of the respondent.

The managers' experience with diversity is the only variable which has a systematic effect on their perception of task characteristics. Managers exposed to more than one language or to more than one country generally perceived their tasks to be more unstructured compared to managers whose experience with diversity is limited to a single country and a single language (Table 5:7). The explanation perhaps lies in the possibility that greater experience with diversity increases a manager's cognitive complexity and thereby allows him to see the complexities of his job more clearly. He has a more complex schema (Hogarth, 1980) and a lesser need for simplifying

judgmental tasks. In other words, all managerial tasks have structured and unstructured components and greater experience with diversity helps a manager to recognise the unstructured aspects of the job and thereby makes him perceive the same task as relatively less structured compared to another manager with lesser exposure to diversity. Alternatively, it is also possible that greater experience with diversity leads to the manager's being assigned more unstructured tasks. Given a correlational findings, it is not possible to identify the actual direction of causation.

Table 5:7 - Relationship between managers' experience with diversity and perception of structure in task

	Manager's experience with diversity	
	Single country or single language	More than one country or language
Task perceived as structured	15	24
Task perceived as unstructured	46	24
Significant at 0.02		

STRATEGIC ORIENTATION

As argued by Chaffe (1984), "strategy" as a term does not have a consensual definition. The differences are more than cosmetic : different authors researching and writing on strategy often differ fundamentally on the nature of the phenomenon they call strategy. In the field of Business Policy, strategy is the process through which the general manager determines the desired future direction of the firm (Andrews, 1983).

In organisational studies, strategy is the process by which an organisation adapts to its changing environment (Child, 1972) - whether or not it has the capacity of voluntaristic adaptation being a major topic of debate. In the field of economics, strategy is the way a firm can conduct itself, given a particular industry structure, to maximise its performance. The underlying assumption is that a firm possesses a set of fixed assets or factors, some of them physical, others consisting of human skills, knowledge and experience. The performance maximising process of strategy, then, reduces to "one of maximising quasi-rents to these fixed factors" (Caves, 1980). The aim and purpose of the writer here is not to debate or discuss these different perspectives on strategy. Instead, it is the writer's desire/wish to highlight the one commonality among them - all these perspectives consider and operationalise strategy at the organisational level of analysis.

The literature on strategy abounds with efforts to relate strategy to various aspects of individual behaviour in organisations. A typical example of such efforts is Hambrick's study, relating organisational strategy (operationalised in the Miles and Snow framework of *reactor*, *prospecter*, *defender* and *analyser* and assessed independently and "objectively" by the researcher) to individual scanning behaviour. This raises an interesting issue about unit and level of analysis. As long as we can think of an operationalised strategy at the organisational level, we can meaningfully relate it with any other variable at the individual level. Doing so essentially assumes organisations as simple and linear aggregates of the individual members and there is evidence to question that assumption. Besides, the issue goes beyond academic hair-splitting on level of analysis. It addresses the basic objective and interpretation of such research efforts. What does an association, say, between the amount of time a particular (or even typical) manager spends reading trade journals and the rate of new product introduction by his firm mean? Such individual behaviour is clearly influenced by a number of factors both external and internal to the individual. Given the possibility of such multiple influences, the validity of interpreting bivariate associations

becomes questionable.

In this study, the writer proposes to maintain the integrity of his level of analysis. As was argued in chapter three, the individual is the appropriate level of analysis for the questionnaire data and to investigate the effect of "strategy" on scanning behaviour of individual managers, it must be operationalised meaningfully at the individual level. This implies that the writer of this thesis must reject the traditional and increasingly popular "objective" measures of strategy - such as the extent of formal planning, creation of patent rights, market share, product diversity, record of acquisitions and merger, *et cetera* - as not particularly useful for this thesis. What is much more useful in this study are the "subjective" measures of strategy - subjective on the part of the responding manager. The manager's behaviour is shaped by, *inter alia*, his perception about his organisation, his goals, methods, and criteria of desirable or acceptable behaviour. It is also influenced by his own attitudes and orientations - his beliefs and styles, his personality and his own way of doing things - that can, to a large extent, be taken as independent inputs to his behaviour within the organisation. The writer of this thesis is of the opinion/view that the individual manager (Western and/or Eastern) develops an overall "strategic orientation" and this orientation is the composite of two different factors; the manager's perception about the strategic orientation of the firm to which he belongs and his individual strategic orientation which is an intrinsic personality trait.

Perception about Firm's Strategic Orientation

As argued by Miller and Friesen (1981), managerial perception about the strategic orientation of their firm can be operationalised through two dimensions. The first is a measure of perceived analytical orientation of the firm; the second is a measure of the emphasis on innovation. In the research instrument section of this thesis, there are four questions pertaining to the issue of analysis: how far ahead does the firm look into the

future for strategy making, time spent by top managers in analysing key decisions, the extent of industry and competitive analysis carried out by the firm, and the use of quantitative analytical techniques. The extent of innovation was addressed through three questions : the rate of new product, process and service innovation relative to those of competitors, the attempt to lead rather than to follow competitors, and the willingness to take risk (see appendix for actual wordings). All the indicators were measured through five point rating.

Table 5:8 - Correlations between indicators of perceived strategic orientation of firm

	Futurity of analysis	Analysis by top management	Industry and competitive analysis	Usage of quantitative techniques	Extent of risk taking	Agressiveness in competition
Innovativeness	0.34 **	0.37 **	0.44**	0.39**	0.20	0.40*
Agressiveness in competition	0.23*	0.27*	0.45**	0.23**	0.36**	
Risk taking	0.14	0.08	0.22	0.02		
Use of quantitative techniques	0.33**	0.26*	0.51**			
Industry and competitive analysis	0.51**	0.41**				
Analysis by top management	0.32**					

Note : * significant at 0.01
 ** significant at 0.001

To analyse and improve the construct, the responses were factor analysed using unweighted least square technique with varimax rotation. The rotated factor matrix is shown in Table 5:9.

Table 5:9 - "Strategic orientation of the firm" - underlying perceptual dimensions

<u>Variables</u>	<u>Factor 1</u>	<u>Factor 2</u>
1. Futurity of analysis	0.60	-
2. Top management involvement in analysis	0.41	-
3. Industry and competitive analysis	0.76	-
4. Use of analytical techniques	0.64	-
5. Extent of risk taking	-	0.57
6. Aggressiveness in competition	-	0.66
7. Product/process/ service innovation	0.50	0.35
Total variance explained 41%		

The overall structure of the two factors is somewhat different from the two dimensions on which the questions were based. The first factor reflects the respondent's perception about the analytical orientation of the firm. The second captures his understanding of the firm's attitude toward risk. The two dimensions that emerge from the analysis are, therefore, not analysis and innovation, but analysis and risk taking. One consequence of this differences is that the only question that directly addressed the issue of innovation get loaded on both the factors reflecting perhaps the vary plausible situation that innovation is a composite of these two underlying dimensions.

As in the case of the environmental and task characteristics variables, additive scales of the measured responses falling uniquely in the two factors rather than the factors themselves were used to represent the dimensions of perceived strategic orientation of the respondent firms. Thus, two additive scales were constructed to measure the two underlying dimensions of analysis and risk-taking. The scale for **analysis** was constructed by adding the scores of the four responses loading on the first factor. The

scale had a very satisfactory level of reliability (cornbatche's alpha of 0.71). Similarly, the two variables loading uniquely on the second factor, viz., attitude to risk and competitive aggressiveness, were added to form a scale for **risk**. Here again, the cornbatche's alpha was 0.56 and, being greater than 0.5, suggest acceptable scale of reliability.

Conceptually, this analysis leads to a representation of the respondents' perceptions about the strategic orientation of their firms in two orthogonal dimensions (Figure 5:1). Considering each as a two state variable leads to the two by two matrix shown in the figure.

The cells correspond exactly to the Miles and Snow typology of organisational strategic types. The *reactor* carries out little analysis, is risk-averse, and reacts to events after they have occurred.

Figure 5:1 - The strategic types

		Willingness to take risk	
		Low	High
Extent of analysis	High	Defender	Analysers
	Low	Reactor	Prospector

The *defender* avoids risks but is analytical in depending the existing domain. The *analysers* combines a high degree of analysis with the willingness to take risks while the *prospector* is risk-seeking but not particularly given to analysis.

To follow through the analysis, the **analysers** and **risk** scales were collapsed into two state variables - low if below the mean of the scale, high if above the mean. Figure 5:2 shows the distribution of the sample into the various categories.

Figure 5:2 - Distribution of study sample among different strategic types

		Willingness to take risk	
		Lower than sample average	Higher than sample average
Extent of analysis	Higher than sample average	Defender (n = 28)	Analysers (n = 15)
	Lower than sample average	Reactor (n = 24)	Prospector (n = 43)

Before proceeding with the discussions, it is necessary to note again that the typology is based on the respondents' perceptions about the strategic orientations of their firms/institutions. In terms of the way the measurement was carried out, they cannot be taken to represent the reliability of the strategies of the firms. However, it may be recalled from chapter three and, in particular, from the discussions about the unit and level of analysis, that this is one of the very few variables where the firm/institution is a significant discriminator for the responding managers. In other words, the perceptions of the individual managers about the strategic orientations of their firms/institutions are reasonably similar for managers within each firm. It may be worthwhile to recall that "perceived strategic orientation of the firm" is one of the few variables for which a significant part of the variance in individual level measures is explained at the level of the institution (see Table 3:17 in Chapter 3). Thus, while the writer measures perception here, in actual practice the homogeneity of perceptions within individual organisations suggest that such perceptions may indeed be indicative of an internal consensus about the firm's strategy. And in the modern view of interpretive strategy (Chaffe, 1984), it is this socially constructed consensus that represents the reality of a firm's strategy. To quote Chaffe, "... reality is defined through a process of social interchange in which perception are affirmed, modified, or replaced according to their apparent congruence with the perceptions of others" (Chaffe, 1984, p9). The writer

submits in this thesis that it is this congruence that he captures through perceptual measures.

The Individual's Strategic Orientation

The writer of this thesis had begun this section by arguing that to analyse the differences in the activities of individual managers, it is necessary to consider not only the differences in their perceptions about the environment, their tasks, and about their organisations but also differences in their own intrinsic attitudes and orientations. The writer has so far described the way in which he measured the relevant environmental, task and company characteristics. For all these variables, empirically tested measures were available from the literature. But, as indicated earlier, the effect of individual characteristics on managerial activities such as scanning has not been explored so far and there was no validated measure of such characteristics available in the literature for ready adoption. However, a conceptual framework for operationalising this dimension has been suggested by Stevenson (1984) and this framework was used in this study for differentiating the respondents along the dimension of entrepreneur-trustee in terms of their intrinsic strategic orientation.

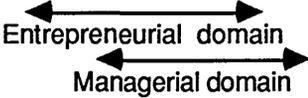
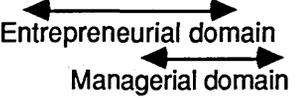
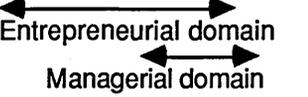
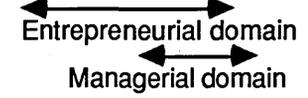
In what he calls "a rough paradigm of entrepreneurship", Stevenson suggests that individual (and corporate) behaviour can be characterised as ranging on a spectrum that runs from the *entrepreneurial* - "the type who says I can make it happen" - to the *trustee* "who says I must guard what I have". He establishes five dimensions for differentiating between *entrepreneurial* and *trustee*-like behaviour. These dimensions are shown in Figure 5:3.

The first dimension is strategic drive. The *entrepreneur* is truly opportunity driven and sees his managerial task as acquisition of resources required to pursue the opportunities presented by the environment. The *trustee* also recognises the need to pursue opportunities but includes in his feasible set only those opportunities that can be

exploited by the slack resources currently available to him. Thus, better exploitation of currently controlled resources rather than opportunities *per se* drives the strategy of the *trustee*.

The next dimension moves beyond the identification of opportunity to its pursuit. The *entrepreneur* "is a person willing to act in a very short time frame and to chase opportunity quickly ... they are able to engage in commitment in a rather revolutionary fashion". A *trustee*, on the other hand, moves slowly, takes a longer time in deciding on his commitments but once the decision is made, the commitments are of long duration.

Figure 5:3 - Distinctions between entrepreneurs and trustees

Entrepreneur	Key business dimension	Trustee
Driven by perception of opportunity	 Strategic orientation	Driven by resources currently controlled
Revolutionary with short duration	 Commitment to opportunity	Evolutionary of long duration
Multistaged with minimal exposure at each stage	 Commitment of resources	Single-staged with complete commitment upon decision
Episodic use of rent of required resources	 Control of resources	Ownership or employment of required resources
Flat with multiple informal network	 Management Structure	Formalised hierarchy

Source : Stevenson, 1984

Commitment of resources is the third dimension along which Stevenson differentiates between these two extremes on the behavioural spectrum. A *trustee* maps all the decision points (Miles, Snow and Pfeffer, 1974) along a particular strategic thrust and undertakes the move only when he is reasonably assured of being able to meet all the resource requirements that are expected to arise along the way. An *entrepreneur*, in contrast, is much more willing to 'bootstrap' the process. His commitment of resources is multistaged, with minimum exposure at each stage. To quote Stevenson,

"he is willing to do a little more with a little less".

The fourth discriminating dimension is the individual's attitude toward control of resources. *Trustees* believe that they do not control a resource unless they own it, *i.e.*, have in-house. An *entrepreneur*, on the other hand, owns only what he must and rents the others as and when needed. He is adept at using others resources and leverages himself far more and pursues more opportunities than a *trustee* with similar resources can engage in.

Finally, with the organisation, an *entrepreneur* prefers to work through informal networking rather than through the formal structure. He prefers an organic system rather than mechanistic one. A *trustee* controls through systems while an *entrepreneur* control through personal contact with all the key actors and through one-to-one relationship.

Measurement and Scaling.

In the questionnaire, the writer directly used the questions proposed by Stevenson (see appendix). As of that time, the questions had not been administered before and no estimates were therefore available of their reliability or validity (The geographical distance of Malaysia and Glasgow, Scotland to have the questionnaire tested before the final introduction of it for this thesis, was a big hindrance and caused the encumbrances encountered afterward).

The Spearman rank correlations among the four dimensions are shown in Table 5:10

Table 5:10 - Correlation between indicators of individual strategic orientation

	Strategic drive	Commitment to resources	Commitment of resources	Control of resources
Management structure	- 0.29*	0.34**	0.20	0.09
Control of resources	- 0.32**	0.00	0.29**	
Commitment of resources	- 0.14	0.13		
Commitment to opportunity	- 0.12			

* significant at 0.01
 ** significant at 0.001

This table highlights a significant problem in the construct, for the measure of strategic drive is negatively correlated with all the other measures of what has been proposed as the same underlying dimension. The first hints of this problem were manifest when the questionnaire was personally administered to the writer's friends or former collegemates and graduates of the same *alma mater* in the United States (managers/respondents) in selected organisations in Malaysia. The respondents had, almost without exception, expressed difficulties in answering this question. They did not perceive the statements at the two end of the scale to be contradictory *per se*. To be opportunity driven was not seen as a counterpoint to more efficient utilisation of existing resources. Besides, to get more out of existing resources may also be seen as an *entrepreneurial* characteristic. Thus, this negative association between what has

been measured as strategic drive and the other measures perhaps is indicative of ambiguity in the way the question was framed rather than of any significant underlying relationship.

This issue emerges even more clearly when the responses are factor analysed. Recall that the dimensions are proposed at different aspects of the same basic distinction - that of between a *trustee* and an *entrepreneur*. Yet, on factor analysis (principal component with varimax rotation), two factors emerge with loadings as shown in Table 5:11. Strategic drive loads negatively on both the factors. Further, management structure and commitment to opportunity do not emerge as unambiguous discriminators, loading almost similarly on both factors. On the other hand, commitment of resources and, particularly, control of resources emerge as very powerful discriminators.

Table 5:11 - Factor analysis : indicators of strategic of individual

	<u>Factor 1</u>	<u>Factor 2</u>
Strategic drive	- 0.03	0.03
Commitment of resources	0.38	- 0.01
Control of resources	0.79	- 0.62
Management structure	0.62	0.65
Commitment to opportunity	0.27	0.29

It has already been argued that the problem with the measure of strategic drive may be improper formulation in general. The ambiguity in the effect of the management structure variable may, on the other hand, be due to situational factors. In the U.S., where the measures had been proposed, the reliance on formal versus informal mechanisms within the organisation may indeed be a valid discriminator between *entrepreneurs* and *trustees*. But, in Malaysia, given the formal and highly structured social and institutional systems, this distinction may not be valid. In fact, as can be seen from Table 4:14, the respondents leaned much more to the *trustee* side on this

question than on any other. In Malaysia, relationships are formal and social and cultural environment may negate the *entrepreneurial*-informal connection proposed in the model.

Finally, commitment to opportunity fails to discriminate, probably because of language difficulties on the part of the respondents. During the application of the instrument, this question, more than any other, required elaborate explanations. (It could have been a disaster, had not the method of applying them *i.e.*, face-to-face, been used). The problem is perhaps two fold. First, the question has a complex language structure which Malaysians, in general, even though they understand English, have some difficulty in interpreting. Second, it is also a complex construct which, as a concept, they find difficult to understand. Note, however, that unlike the question on strategic drive, they have no difficulty in understanding the dimensions and in accepting the two extreme as valid opposites once the construct is explained to them. In other word, the problem is not one of validity of the construct but one of framing the question and the same question may perform very well among respondents with greater skills in the English language.

Given these problems with three of the five measures, and in view of the excellent discriminating power of the remaining two, a decision was taken to ignore the three and to use only the two unambiguously differentiating variables for constructing a composite scale for measuring individual strategic orientation. Thus, the respondents' scores on the two dimensions of commitment of resources and control of resources were added to form this scale labelled ENTRPR. The scale had a rather poor but marginally acceptable reliability (alpha of 0.47). The scale was further split in two halves, as in the case of the other variables, to create dichotomous categories of respondents as *entrepreneurs* or *trustees*.

RELATING PERCEPTIONS OF ENVIRONMENT, TASK AND STRATEGY.

In this chapter, the writer has established the scales and measures for the various variables that are a-priori expected to influence scanning behaviour of managers. Some of these measures are direct and simple - such as the hierarchical level of the manager. Some others, at the level of individual attributes, are operationalised as complex and composite variables, for example, the manager's experience with diversity. For the environment, two composite scales for measuring *predictability* and *heterogeneity* was established. The task was also characterised in terms of one dimension - the extent of structure - and have established an additive scale for its measurement. Finally, the writer of this thesis has proposed and constructed scales and measures both for the manager's perception of the firm's strategic attitude and for said manager's own intrinsic strategic orientation. Before moving on to the actual data on scanning, it is necessary to explore how these variables, which may influence or moderate scanning behaviour or be influenced and moderated by it, are associated among themselves. The writer's objective at this point is only to note the associations and not really to interpret them. The language used may imply a certain causal direction, but this is only for the convenience of exposition (*i.e.*, to avoid repetition of the statement "or the other way round"). Do very kindly note that the writer of this thesis claim no specific direction of causality.

Environmental characteristics and strategic orientation.

Table 5:12 shows the Spearman correlation between the two dimensions of environmental characteristics and the three measures of strategic orientation - two for the firm and one for the individual. Only correlations significant at 0.05 or less have been shown in the table. As can be readily observed, environmental predictability is not correlated with any of the other variables, while environmental dynamism is

positively and significantly correlated with both the measures of perceived organisational strategy, and also the measure of personal strategic orientation of the manager.

Table 5:12 - Correlations between environmental characteristics and strategic orientation

	<u>Individual entrepreneurial orientation</u>	<u>Risk taking by firm</u>	<u>Extent analysis in firm's strategy making</u>
Predictability of environment		-	-
Dynamism of environment	0.23	0.30	0.35

The finding that strategic orientation is associated with environmental dynamism but not with predictability, is entirely consistent with Miller and Friesen's (1981) findings in their study of successful and unsuccessful U.S. and Canadian firms. The results are not directly comparable here since the writer use only two dimensions to describe the environment while Miller and Friesen used three. They however, did not carry out any investigation to see if their conceptual scheme proposing the three dimensions were indeed supported by the data.

But, their results were unambiguous and the distinction between successful and unsuccessful firms was unequivocal only with regard to the association between environmental dynamism and organisational analysis and innovation; a result that is validated by the data used in this thesis.

A possible explanation may lie in what has already been discussed earlier in this chapter. Environmental predictability is largely perceived through experience of the past: it is based on the pattern of confirmation or disconfirmation of expectations based on previous events or facts. To an extent, therefore, perception of environmental

predictability is more objective (refer, for instance to the finding that this perception does not vary systematically across the organisation hierarchy). Environmental dynamism, on the other hand, is much more subjective; like beauty, it lies much more in the eyes of the beholder. A more proactive company - more intrusive, in the language of Daft and Weick (1984), makes salient a wider array of interlinkages and interdependencies and also enhances members' sensitivity to external changes. Thus, managers in such relatively intrusive firms, firms/institutions that are more analytical or risk-seeking or both, tend to see their environments as more dynamic and heterogeneous.

Environmental characteristics and perception of structure in task.

Environmental characteristics are found not to have any association with the managers perception about the extent of structure in their task.

Daft and Macintosh (1981), in their survey in Canada, had found a significant association between task analysability (the principal component in the task structure variable used in this study) and equivocality of information (measured quite similarly to the writer's measure of environmental predictability). This finding cannot however be validated because the data in this thesis did not yield any significant correlation between the two variables.

Strategic orientation and perception of task.

Table 5:13 shows the associations between the respondents'1 perceptions about the extent of structure in their tasks, their individual strategic orientation and their perceptions of their firm's strategy. Only correlations significant at 0.05 are shown in the table.

Table 5:13 - Corelation between task characteristic and strategic orientation.

	Individual's entrepreneurial orientation	Risk taking by firm	Analytical orientation of firm
Perception of task structure	- 0.14	-	0.12

The more entrepreneurial the manager, the less structured the task is perceived to be. Conversely, *trustees* tend to consider their task as relatively more structured.

The second association is also logically consistent. The more unstructured the task, the more the organisation has to be and is seen to be analytically oriented. Unstructured task create uncertainty and necessitate analysis for uncertainty reduction.

Chapter Six

The extent of scanning

CHAPTER SIX

THE EXTENT OF SCANNING

In this chapter, the respondents' overall attitudes and behaviour with regard to the environmental scanning function are explored. Principally two issues are addressed: how important do they perceive the scanning task to be, and how much of their total work time do they allocate to this task. The effects of different environmental, organisational and individual attributes on such attitudes and behaviours are investigated.

IMPORTANCE OF SCANNING

The respondents to the questionnaire had been asked to rate the importance of environmental scanning for carrying out their own jobs. They had a choice of three categories: 'not important', 'moderately important', and 'extremely important'. The distribution of responses is shown in Table 6:1.

Table 6:1 - Importance of scanning

	Frequency	Percent
Not important	7	6.3
Moderately important	38	34.2
Most important	65	58.6

For clearer analysis, the two categories of 'not important' and 'moderately important' were combined into one - "not very important" which was then contrasted with the category "most important". Private firms' and/or WCF managers consider scanning to be relatively more important than do their counterparts in the NWCF (Table 6:2). This seems to be consistent with the nature of their businesses; information being the chief asset and stock-in-trade for the WCF.

Table 6:2 - Effect of firm's business on perceived importance of scanning

	Types of institutions/firms	
	WCF	NWCF
Perceived importance of scanning		
Not very important	18	27
Very important	40	25
Significant at 0.01		

Top managers appear, in general, to consider scanning to be more important compared to their lower level colleagues (senior/middle and junior managers). This can be seen from Table 6:3.

Table 6:3 - Effect of management level on perceived importance of scanning

	Top management	Others
Perceived importance of scanning		
Not very important	4	41
Very important	16	49
Significant at 0.05		

As could be expected, *entrepreneurs* were found to consider scanning to be relatively more important than do *trustees* (Table 6:4).

Table 6:4 - Effect of individual strategic orientation on perceived importance of scanning

		Entrepreneur	Trustee
Perceived importance of scanning	Not very important	17	27
	Very important	33	31
Significant at 0.05			

Predictably, a perception of tasks being relatively unstructured lead to enhanced importance of scanning (Table 6:5)

Table 6:5 - Association between perceptions of task characteristics and scanning importance.

		Structured task	Unstructured tasks
Perceived importance of scanning	Not very important	19	26
	Very important	21	44
Significant at 0.05			

Scanning importance is not associated with the predictability of the environment. Perhaps, in an unpredictable environment, information ceases to be very important since it cannot reduce uncertainty or guide action. But *heterogeneity* of the environment increases the perceived importance of scanning (Table 6:6) as more sectors or environmental actors become salient the need for monitoring them become more manifest.

not what it purport to be (not genuine)

In interpreting these associations, it must be cautioned that some of them may be quite spurious, due either to the nature of the sample or the correlations between the different criterion variables. In the chapters that follows, a multivariate model building approach will be employed where the interactions among the influencing variables will be specially considered. The objective of looking at the bivariate relations is primarily descriptive - to develop in a step-by-step manner the smaller pieces of the model so that the final multivariate picture can be interpreted more meaningfully.

Table 6:6 - Effect of environmental heterogeneity on perceived importance of scanning.

		Environment perceived as	
		Homogeneous	Heterogeneous
Perceived importance of scanning	Not very important	28	16
	Very important	30	35

Significant at 0.05

TIME SPENT ON SCANNING

The respondents had been requested to estimate the total number of hours in an average work week that they devoted to scanning. On the average, the sampled managers spent fourteen hours a week on different activities of weekly scanning time for the sample shown in Table 6:7. It can be seen that there are a few extreme scores - eight respondents claiming to spend more than forty hours per week on this function. On investigation, they were found to belong to the formal scanning units of their organisations, devoting their full time to this activity.

Table 6:7 - Distribution of weekly scanning time.

Number of hours per week spent on scanning	Frequency
0 to 12	34
11 to 20	51
21 to 30	15
31 to 40	1
41 to 50	4
51 to 60	4

Effect of management level on scanning time

Almost all past researchers on scanning have explored at considerable length the effect of management level on scanning behaviour - searching for evidence to support the traditional conception of top executives as the primary link between the organisation and the environment. Hambrick (1982) has recently reviewed the evidence, along with his own findings, and has shown that research findings so far do not provide any evidence to support this contention.

The data in this thesis generally confirms the past findings about the absence of any significant association between management level and scanning time. However, it does show a statistically significant difference in total time spent on scanning by WCF and NWCF managers. NWCF executives used as sample in this thesis spend an average sixteen hours per week on scanning, considerably more than the twelve hours spent by their counterparts in WCF. Perhaps WCF executives need to scan only the output market while NWCF managers need to monitor the input, throughput and out markets, thereby requiring more scanning effort and time. Or, perhaps, given the nature of their work, WCF executives do not perceive certain activities as scanning, while NWCF executives classify them as such.

Table 6:8 - Joint effect of firm's business and management level on total scanning time. [Figures in brackets are cell counts].

	Total scanning hours per week		
	WCF	NWCF	Total sample
Junior managers	12 (34)	(29) 14	16 (63)
Senior/middle managers	11 (8)	(18) 14	24 (26)
Top managers	12 (9)	(11) 11	11 (20)
Average	12 (51)	(58) 14	16 (109)

Scanning and perceived structure in tasks.

More time is spent on scanning by managers who perceived their task as unstructured compare to those who see their tasks as relatively structured (one way analysis of variance $F = 1.94$ significant at alpha 0.11)

Table 6:9 - Scanning time and perception of task structure.

	Hours per week on scanning
Task is seen as structured	12
Task is seen as unstructured	15

This is a reconfirmation of a pattern in the relationship between scanning and perception of task that has consistently emerged earlier : unstructured tasks enhance the importance of and the effort and time invested in collecting information. That association, as a number of organisation theorists have argued, is the basic premise of the information processing view of organisations and the pattern of consistent results

emerging from this study provides a degree of support to that theory.

Effect of environment and strategy

Curiously, neither the environmental characteristics nor perceived orientation of the firm, had any significant main effect on the amount of scanning time. Similarly, the personal strategic orientation of the individual also does not appear to have any discernible influence on the time spent by managers in collecting external information. Note that many of these variables were found to have significant effects on the perceived importance of scanning and the time devoted to it. This is a phenomenon which will be dealt with in greater details in the chapters that follows.

Chapter Seven

The content of scanning

CHAPTER SEVEN

THE CONTENT OF SCANNING

In the preceding chapters, the respondents' attitudes and their behaviour was explored with regard to the overall function of environmental scanning. This chapter, attempts to develop a more disaggregated understanding of environmental scanning at the individual manager level. What kinds of information do the responding managers consider to be important?. What kind of information do they acquire? What sources do they use? Are these choices affected by the personal, organisational and environmental attributes discussed in chapter two? These are the questions addressed in this chapter. The findings are compared with those of previous studies on scanning behaviour of managers in the U.S. institutions and its is seen that similarities are indeed remarkable. Finally, the kinds of information acquired are juxtaposed with the sources used to develop a profile of how external information flows into an organisation.

THE FACTOR CLASSIFICATION

Aguilar (1967) evolved a categorisation scheme for grouping different kinds of information along different factors. The schema was developed empirically rather than normatively and has stood the test of time, having been adopted successfully by a number of different researchers including Keegan (1967) Collings (1968), and Kefalas and Schoderbek (1971). This study, adopts a similar factor classification, making it easy to compare the findings about Malaysian managers with the earlier findings about American managers.

The factor classification provides a descriptive grouping of different kinds of information collected. As suggested by Keegan, the norms for a proper factor classification schema are:

1. Collectively, the factors must be exhaustive, *i.e.*, each item of information should find a place in one of the factors.

2. The factors must be mutually exclusive. Any given item of information must belong, as unambiguously as possible, to one of the factors.
3. The classification must be functional and must be related to actual scanning practices.

While a number of researchers have used the overall factor classifications scheme proposed by Aguilar, all of them have also made minor changes to the actual definitions of the different factors so as to suit their specific purposes. In this study, the same schema is also used which in essence is synthesis arising out of those previous studies. The different factors and the kind of information included in each are as below:

1. Competitive Factors:

All information connected with competitor, present and potential, including their actions, decisions, strategies, plans, strength, weaknesses, *et cetera*.

2. Market factors :

All information about the markets excluding issues connected with competition. Examples: market potential, customers' needs and taste, distribution channels, promotion responses, *et cetera*.

3. Technology Factors :

All information about present and potential products and process technologies.

4. Regulatory Factors :

All information regarding regulations that can affect the respondents business operations, including information about regulatory agencies and personnel.

5. Resource Factors :

All information on financial, labour and raw-material markets that affect goods and services, resources and services procured by the firm for carrying out its operations.

6. Broad issues :

All information on demographic, social, economic and political trends.

7. Other Factors :

Information on factors not included in any of the earlier categories, *e.g.*, indigenous (*bumiputras*) interest, (the indigenous group of citizens of Malaysia are given special privileges in term of relaxation of the stringent regulations imposed on trade and commerce enshrined in the country's constitution), *et cetera*.

Testing the Factor Classification Scheme

While the factor classification scheme was adopted primarily in the interest of comparability of findings, the appropriateness of the construct was also tested.

All respondents were asked a direct question about their reaction to the construct and whether the categorisation scheme captured the way they think about external information. Out of the 108 valid responses received, 105 or 97% agreed that the classification scheme was appropriate and reflected the way they thought about information. This was a clear and strong vote in favour of the construct.

Next, there is a possibility that underlying the seven factors was a smaller number of distinct and non-overlapping groups. This possibility was explored in two ways: through a study of correlations between the factors and also by direct factor analysis.

Only two significant correlations were found among the factors. Competitive and market factors were correlated with each other as were the broad issues and residual "others" factors. These associations are expected and logical. But on factor analysis using unweighted least squares, no more parsimonious factor structure emerged and after the third iteration, the eigenvalues and vectors were not calculable. Thus, overall, the factors were quite independent and distinct.

On the basis of this analysis, it was concluded that the factor construct used in this study was appropriate and that the seven categories of factors were non-overlapping enough to be meaningful.

IMPORTANCE AND DIFFICULTY ASSOCIATED WITH FACTORS

Respondents were asked to rank the factors on a seven point scale in terms of their relative importance for the respondent's own work and also in term of the difficulties in collecting valid information on them. The average scores (both *mean* and *mode*) for importance and difficulties are shown in Table 7:1.

Table 7:1 - Importance and Difficulties scores

	Importance		Difficulties	
	Means	Modes	Means	Modes
Competitive	5.3	7	4.6	6
Technology	4.4	5	4.9	7
Regulatory	3.7	3	3.8	3
Resources	4.0	3	3.8	4
Broad Issues	3.1	2	3.8	2
Others	3.0	1	3.1	1

The importance and difficulties scores for all the factors are correlated positively and significantly at 0.01 level. Thus, there is a clear and direct one-to-one mapping between the

perceived importance of factors and the difficulty in collecting information on them.

In a survey of American managers carried by Ghoshal (1983), he collected the factor importance scores from each of thirty-two Fortune 500 U. S. multinationals. In that survey a classification scheme using only five factors were used. In Table 7:2 the rating obtained from the Ghoshal's study are compared with the findings from the present study of Malaysian managers.

Table 7:2 - Perception of factors importance : comparison of U.S.managers and Malaysian managers

	Relative importance of factors to the U.S. managers (scale 1 - 5)		Relative importance of factors to Malaysian managers (scale 1 - 5)	
	Score	Rank	Score	Rank
Competitive Market	4.3	1	4.6	2
Technology	Nil	Nil	4.9	1
Regulatory	2.9	5	4.2	3
Resource	3.2	3	3.8	6
Broad Issues	3.3	2	3.8	4
Others	3.0	4	33.8	5
	Nil	Nil	3.1	7

Both groups of managers consider competitive and market information as the most important. However, there are interesting and fairly sharp differences between the groups with regard to the other factors. The sample of U. S. managers had given the lowest importance rating to the technology factor. The Malaysian, in contrast, consider technological information to be second in importance only to market and competitive information. There are limitations in this comparison arising out of the research methodologies - primarily the rather severe non-response bias in the Ghoshal study and its focus on general managers in the international divisions of American multinationals. But, the hierarchical and functional distribution of the samples are not different enough to

warrant such a major differences in the scores. Perhaps the explanation lies in the fact that the Ghoshal study saw U.S. managers are of international operations - looking from the U. S. outward. These managers do not focus on technological information, for they perceived that there is little to learn on that front from abroad. The Malaysian respondents are managers/leaders looking from Malaysia - mostly outward, the U.S. and Japan. Monitoring technology is much more important for them. Another possible explanation may be that technology monitoring is a highly specialised and differentiated function in the U.S. and the regular line managers, therefore, do not concern themselves with this aspect of scanning. Such specialisation may be far less in Malaysia, thereby making the line managers more involved in looking out for technological information.

Another significant difference lies in the score for regulatory information. U.S. managers consider regulatory information to be relatively more important than do Malaysian managers. One possible explanation is that most of Malaysia's international business is conducted with relatively free-market countries - the U.S., EEC and the Middle East. For the U.S. firms, the share of business conducted in developing countries was higher, and the share of problems possibly even more so. These are controlled markets for which regulatory information assume greater importance. Besides, the findings may be indicative of concern often voiced inside and outside Malaysia - that Malaysian managers are often not sensitive enough to regulatory developments. Actions by the U.S. government, at the time of writing this thesis, affecting Malaysian exports of tin and palmoil *et cetera* and a host of other products will perhaps soon reduce this difference.

TIME SPENT ON FACTORS

The respondents were also asked to estimate the percentage of their total scanning time spend on the different factors. The average scores along with the standard deviation are shown in Table 7:3.

Table 7:3 - Distribution of scanning time among factors

Percentage of scanning time spent on factors		
	Mean	Standard deviation
Competitive	20	10.1
Market	27	12.5
Technology	13	11.0
Regulatory	12	7.5
Resources	12	6.4
Broad Issues	10	8.5
Others	5	4.4

A number of earlier studies have investigated the same issue - though they have adopted different methodologies and instruments. Table 7:4 compares the findings of this study with those of the five major studies conducted in the U.S. This table shows that the scanning pattern of Malaysian managers, at least in terms of the relative amount of time spent on different kinds of information, is not dissimilar to that of their American counterpart. For each factor, the average score for the Malaysian sample lies within the range defined by the previous survey in the U.S.

Table 7:4 - Factors scanned : a comparison of findings

<u>Factors</u>	Chemical industry in the U.S. (Aguilar)	Financial services industries in the U.S. (Collings)	American multinationals (Keegan)	Meat packing industry in the U.S. (Kefalas and Schoderbek)	Farm equipment industry in the U.S. (Yunggar)	Leading govt. backed firms in Malaysia (WCFs and NWCFs) (Yunggar)
Competitive	58	54	20	33	35	20
Market	-	17	-	-	-	13
Technical	18	12	-	20	30	13
Regulatory	-	17	27	18	8	-
Resource	-	9	16	-	-	-
Broad issues	8	-	-	-	-	10
General conditions	-	5	15	-	-	-
External growths	-	-	-	7	6	-
Others	9	3	5	23	21	5
Acquisition leads	-	-	-	-	-	-
N =	190	238	139	44	45	111

Influences on the allocation of scanning time among factors.

Compared to NWCF, WCF spend relatively a greater share of their scanning time in monitoring competitive and market information. The NWCF, in turn, focus relatively more on technological information (Table 7:5). There is no significant difference between them with regard to the share of scanning time spent on other factors. These differences are entirely expected and plausible, given the nature of their businesses and the functions they carry out.

Table 7:5 - Scanning in WCF and NWCF in Malaysia

	Nature of the firm's business		
	WCF	NWCF	Is difference significant?
Competitive	23	18	Yes, at 0.001
Market	31	23	Yes, at 0.001
Technology	9	18	Yes, at 0.001
Regulatory	12	11	Yes, at 0.100
Resource	11	12	No, at 0.100
Broad Issues	9	11	No, at 0.100
Others	4	5	No, at 0.100

Hambrick (1982) has reviewed quite exhaustively the existing literature attempting to relate scanning with the hierarchical level of managers. As shown by him, no unambiguous relationships have been found despite the common notion that scanning behaviour of senior managers is quite different from that of their junior colleagues. The only exception (though this study was not covered in Hambrick's review, perhaps because it has not been published) was the survey of the U.S. financial services industry by Collings (1968) who found that, in comparison to lower level managers, top managers spent a far lower share of their time scanning for market information and far more of their time on regulatory information. But this may well have been a peculiarity of the industry and not a general phenomenon. Hambrick found some weak evidence of positive association between management level and scanning only for the output sector (market, *et cetera*) and that too, only for the insurance company sample, reinforcing the hint that this is an industry-specific relationship.

Table 7:6 shows the distribution of factor-wise scanning time segregated by manager's level for the Malaysian managers sampled in this study.

Table 7:6 - Effect of management level on share of time spent on different factors.

	Percentage of total scanning time		
	Junior managers	Middle/Senior managers	Top managers
Competitive	21	21	19
Market	24	33	27
Technology	15	11	13
Regulatory	12	10	12
Resource	12	11	11
Broad Issues	9	9	14
Others	5	4	4

None of the differences are statistically significant even at the 0.01 level, except for the market factors on which middle managers are found to focus much more than either the top or the bottom of the hierarchy.

This is a very weak first sight of a phenomenon that will surface again in this thesis that middle managers play a different and particularly crucial role in scanning. For the time being, however, it should be noticed that, overall, the data confirms the previous finding that management level is not a significant explanatory variable of differences among managers in terms of the kind of information they spend their time to acquire.

The fact that marketing managers spend more of their time on marketing information, or that financial managers focus relatively more on financial information is neither very surprising nor probably very interesting. However, such associations serve one important purpose; their presence enhances credibility of the data and, thereby, of the other associations suggested by the data. All previous research on managerial scanning had found such associations between functional affiliation of the managers and their allocation of scanning time among the various factors. This relationship emerges very clearly in this

study also : marketing executives scan the market more than others, R&D managers concentrate on technological information, finance managers monitor resource related issues and planning functionaries pay relatively greater attention to the regulatory factors (Table 7:7).

Table 7:7 - Effect of functional affiliation on factor-wise scanning

<u>Factor</u>	Marketing	R & D	Planning	Finance	Gen. Mgt.	Others
Competitive	23	17	18	20	20	26
Market	33	24	22	29	30	19
Technology	10	21	12	10	12	18
Regulatory	10	12	6	13	9	13
Resource	10	10	13	17	12	13
Broad issues	10	9	11	9	12	9
Others	4	3	6	6	2	4

Note : Figures within boxes are significantly different (at 0.10) from others in the same row (F test)

The effect, if any, of a number of other variables on allocation of scanning time was explored. It was observed that perception about the task and about the strategic orientation of the company did not have a significant effect on the kind of information a manager emphasised in this scanning efforts. But, perceived environmental predictability and the personal strategic orientation of the individual had significant effect on one or more of the factors (Table 7:8 and 7:9).

Table 7:8 - Effect on perceived predictability of the environment on factor-wise allocation of scanning time.

	Percentage of total scanning time		
	Environment perceived as predictable	Environment perceived as unpredictable	Significant of ANOVA 'F' statistics
Competitive	22	18	0.04
Market	29	25	>0.14
Technology	12	14	>0.10
Regulatory	10	13	>0.10
Resources	10	13	0.10
Broad Issues	10	10	>0.10
Others	5	4	>0.10

In a predictable environment, scanning is relatively more concentrated on the output market; on market conditions and on monitoring customers and competitors' behaviour. This is the behaviour under condition of stability and during time of peace - the stability often arising from oligopolistic industry structures. Other factors play a relatively unimportant role as players depend their niches and focus their strategy on incremental progress. There is change in the environment, caused mostly through competition, but no discontinuity. When, on the other hand, the environment is perceived as unpredictable, the present ceases to be very relevant for projecting the future because of the possibility of discontinuities. The discontinuities often occurred outside the traditional industry domain defined through the supplier-producer-customer nexus. They are produced by technological break-through, by regulatory actions or other forces that are largely unpredictable.

The principal concern for the firm then becomes its ability to respond flexibly to such changes, as and when they arise. The critical factor becomes the capability to respond

which often depends on the availability of resources. This perhaps makes the resource sector more critical and its scanning more important in an unpredictable environment.

The other significant associations, that correlate with the entrepreneurial orientation of the manager, is also consistent with intuitive expectations. The *entrepreneur* concentrates much more on the output market than does the *trustee*. As *trustee's* scanning practice is much more evenly balanced, with a relatively (compared to the *entrepreneur*) greater emphasis on information relevant to the throughput process. The difference is just what one would expect between a prospector of opportunities and a defender of the current position.

Table 7:9 - Effect of individual strategic orientation on allocation of scanning time

	Percentage of total scanning time	
	Entrepreneur	Trustee
Competitive	22	19
Market	28	26
Technology	10	16
Regulatory	12	11
Resources	12	12
Broad Issues	11	10
Others	5	5

Importance of factors, difficulty in collecting information on them, and the allocation of scanning time.

It was shown earlier in this chapter that there is a close association between the perceived difficulty in acquiring different kind of information and the importance a manager attaches to such information. What is difficult to get is also important, whatever may be the causal direction. What is more interesting, however, is that the shares of scanning time spent by managers on different factors are not consistent either with the perceived importance of those factors or with the difficulty in collecting information on them. Table 7:10 shows the

Spearman rank correlation between the importance and difficulty scores and between the importance scores and time shares for the different factors.

Table 7:10 - Correlations between importance, difficulty and time shares

	Spearman rank correlations between			
	Importance and difficulty scores		Importance score and time share	
Competitive	0.45	(0.000)	0.13	(0.082)
Market	0.34	(0.000)	- 0.01	(0.445)
Technology	0.34	(0.000)	0.27	(0.002)
Regulatory	0.13	(0.080)	- 0.05	(0.309)
Resource	0.24	(0.007)	0.11	(0.128)
Broad Issues	0.43	(0.000)	0.22	(0.011)
Others	0.55	(0.000)	- 0.05	(0.315)

The source of the discrepancy is that managers spend disproportionately large amount of their time scanning the market and competitive factors and too little on regulatory and other socio-economic issues. Their importance scores are distributed in a far more balanced way across the factors than is their allocation of scanning time. Here is evidence of a phenomenon often commented on (*e.g.*, Willensky, 1967) - of short term interests driving out long term interests; of *managerial myopia*. What is interesting is that the behavioural outcome is not due to any problems of perception and understanding. It occurs in spite of and in contradiction to the perception. As Wellinsky comments, the desire for immediate predictions and the reliance on "hard facts", results in managers spending disproportionately large share of their scanning efforts on the immediate output market. The contradiction is between perceived urgency and importance.

An interesting hypothesis follows. The gap between what is seen as important and what is actually done often results from a manager's lack of control on his or her time. External

pressures of immediacy rather than perceived importance of a task dictates allocation of managerial time. However, top managers probably enjoy relatively greater freedom with regard to how they should allocate their time and can, therefore, allocate it more consistently in terms of the relative importance of different categories of tasks. One can, following this argument, expect to see a stronger correlation between factor-wise importance scores and distribution of scanning time for top managers compared to their junior colleagues. As can be seen from Table 7:11, the data in this thesis provides fairly strong support for this hypothesis. Five of the seven correlations are significant for top managers, while three are significant for senior/middle managers and only one is significant for the junior manager. What we have, however, is evidence of an association for which many causal explanations can be offered beside the argument of control overtime that has been presented. It can, for instance, be argued that top managers become top managers because they focus on the important and can allocate their time accordingly. A more complex organisational argument can be that in scanning, as in any other function, there are certain routine aspects that may not be very important but that need to be done any way, and these routine tasks are mostly left to managers at relatively lower levels.

In other words, while there may be a gap between what is seen as important and what is actually done at the individual level, there may be no such gap at the organisational level.

Table 7:11 - Importance of and time spent on factors - effect of NWCF level.

	Correlation between importance of time spent on different factors		
	Top	Senior/Middle	Junior
Competitive	*		*
Market	**		
Technology	***	***	
Regulatory		**	
Resource	*		
Broad Issues	***		
Others		*	

*** Significant at 0.001
 ** Significant at 0.05
 * Significant at 0.10

USE OF SOURCES

In scanning research, sources have been principally categorised as internal and external to the organisation. An individual manager can receive information about the environment directly from external sources like customers, suppliers, consultants, publications, *et cetera*.

He can also receive such information from within the organisation; from supervisors, subordinates or peers; from reports and computer data bases, and so on. Sources have also been categorised as personal and interpersonal, depending on their relationship with acquirer.

Internal and External Sources.

Internal sources contribute, on the average, about 43% of all external information acquired by the managers/leaders sampled in this study. The share, ranges from a minimum of 10% to a maximum of 90%. Conversely, external sources are relatively more important than internal sources and contribute 57% of all external information acquired.

Table 7:12 compares the relative usage of internal and external sources by the Malaysian managers to the corresponding findings of the three major studies investigating scanning practices of U.S. managers. As can be readily observed, the Malaysian survey results are remarkably similar to the findings of Aguilar from his sample of managers in the U.S. chemical industry. But, the Malaysian managers use internal sources considerably more than Collings' estimate for managers in the U.S. financial services industry or Keegan's estimate for managers in U.S. multinationals.

Table 7:12 - Use of internal and external sources

	U.S. managers			
	Aguilar study	Collings study	Keegan study	Malaysian managers
% Internal sources	45	26	34	43
% External sources	55	74	66	57

The relative use of internal and external sources was found to be almost identical in WCF and NWCF firms. Similarly, the characteristics of the environment or differences in individual strategic orientation or in perceptions about organisational strategy has no significant effect on the relative use of internal and external sources. The only variable that systematically affect the pattern is the organisational level of the manager. Middle managers use external sources much more than do either junior or top managers. This

observation is valid for both WCF and NWCF firms and is another glimpse of a phenomenon that has been encountered earlier, viz., that middle managers constitute the key organisational probe into the external environment of the firm.

Table 7:13 - Effect of management level on use of external sources.

	Percentage of external information acquired from external sources					
	Top managers		Senior/middle managers		Junior managers	
WCF	58	(11)	66	(18)	50	(29)
NWCF	57	(9)	63	(8)	56	(35)
Overall	58	(20)	65	(26)	54	(35)

Internal sources:

Table 7:14 shows the principal internal sources of environmental information and their contribution to the total share of all internal sources.

The results are entirely consistent with those obtained by Aguilar and Collings. They are, however, contradictory to the findings of Kefalas and Schoderbek who had reported meetings as the single most important internal sources.

Table 7:14 - Relative use of different internal sources

	Share of all internal sources %
Colleagues in same office	32
Colleagues in other (including branch/overseas) offices of firm	26
In house meetings	10
Internal reports	8
Computer database	8
Others	6

The importance of internal reports as a source of information has been debated in the literature. Kefalas and Schoderbek, had found it to be very important source; others, particularly Collings, had found it to be relatively unimportant. This study finds that perceived structure in task significantly affects the relative importance of internal reports as a source of external information. Reports become more and more important when the task is seen as structured compare to when the task is felt to be unstructured (Table 7:15). Perhaps this is one of the reasons for the different findings in previous studies. It can be argued that service companies in general, are relatively, less differentiated and specialised, and managers in such firms face relatively less structured tasks compared to managers in NWCF firms. The greater structuring of managerial tasks in the sample firms may be the reason that Kefalas found meetings to be as important as he did.

Table 7:15 - Effect of task on use of internal reports as a source of external information.

	Task perceived as	
	Structured	Unstructured
Use of internal reports (as % of all internal sources)	20 (n = 40)	16 (n = 70)

(ANOVA F = 2.83, significant at 0.09)

Superiors, subordinates and peers information sources.

Respondents had been requested to indicate which, out of superiors, peers and subordinates, were most and least useful sources of external information. Results are shown in Table 7:16 (there was some overlap since some respondents marked more than one as most or least important). Clearly, subordinates are felt to be less important, in general, then either superiors or peers.

Table 7:16 - Usefulness of superiors, subordinates and peers as sources of external information.

Usefulness as a source of external information (percentage of respondents)		
	Most important	Less important
Superiors	49	28
Peers	49	27
Subordinates	36	46

As can be expected (and observed by Aguilar and others), the lower the level of the manager, the greater the usefulness of superiors as information agents.

Table 7:17 - Effect of management level on importance of superiors as information sources

	Hierarchical level of management		
	Top	Senior/middle	Junior
Superior most important	7	10	32
Superior least important	9	6	13

(Figures are cell counts)

Also, the more unstructured the task is perceived to be, more useful is the superior (Table 7:18). With structured tasks, most useful information is of the "hard" or "*facts and figures*" variety described by Willensky (1967). With unstructured tasks, softer or *judgmental* information becomes more useful enhancing the importance of superiors who, with their broader perspective and experience, are better equipped to provide soft rather than hard information.

Table 7:18 - Effect of task characteristics on usefulness of superiors as information sources

	Task perceived as	
	Structured	Unstructured
Superior most important	14	35
Superior least important	12	16

(Figures are cell counts)

Perceived environmental characteristics also affect the usefulness of superiors as information sources : they are seen as more important when the environment is considered to be unpredictable and heterogeneous (Table 7:19). This observation is entirely consistent with the explanation that has been suggested above for the effect of perceived task characteristics.

Table 7:19 - Effect of environmental characteristics on importance of superiors as information sources.

	Superior most important	Superior least important
Predictable	20	19
Unpredictable	29	9

(Significant at 0.01)

Environmental characteristics

Homogeneous	20	16
Heterogeneous	29	12

(Significant at 0.05)

The importance of subordinates is almost a mirror image of the importance of superiors - all the significant relationships exist in reverse order. However, there is one variable that affects the importance of subordinates as information sources but not that of superiors - the nature of the firm's business. Subordinates are seen as relatively more important sources of external information in WCF compared to NWCF. (Table 7:20).

*Table 7:20 -Importance of subordinates as information source :
WCF and NWCF*

	WCF	NWCF
Subordinate is most important	25	11
Subordinate is least important	17	29

(Significant at 0.001)

This numerical observation confirms something that emerges quite clearly as one spends some time in these companies/firms. The NWCF in Malaysia work in very traditional ways which, consistent with its social and institutional culture, are highly feudal and top-down. With such organisational arrangements, there are enormous problems in information flowing up. Information, particularly useful external information, almost by definition flows down, the WCF firms, in contrast, are far more informal and westernised in their work styles and both structurally and culturally they are more conducive to the upward flow of information. This can be seen as *organisational isomorphism* of a sort (DiMaggio and Powell, 1982) - the WCF firms, dealing as they are with foreign firms, adopt ASEAN/Eastern (as seen in the *Look East Policy*, among other moves), and of course, Western styles and systems. This is manifest in the way the offices are laid out, in the way people at different levels interact and is visible even to a casual visitor to both kinds of firms. One of the effects of this difference is reduced emphasis on hierarchy and a freer flow of information both ways across organisational levels.

External sources.

Table 7:21 shows the relative usage of different external sources by the sampled group of Malaysian managers. Customers, suppliers and publications are relatively important external sources; advertising agents, consultants and trade shows are relatively unimportant. The pattern is entirely similar to the relative importance of different external sources observed in the U.S.

Table 7:21 - Use of different external sources

	Percentage of all external sources
Customers	16
Suppliers	12
Bankers	8
Advertising agents	5
Agent and distributors	10
Consultants	6
General publications	16
Trade publications	15
Trade shows	6
Others	5

With regard to the relative use of internal sources, there was no significant difference between WCF and NWCF. However, the usage of external sources are quite different in the two (Table 7:22). The WCFs rely a lot more on customers and suppliers than do the NWCF. This, however, is not surprising, given the nature of the two kinds of businesses.

Table 7:22 - Usage of external sources. WCF and NWCF

	Percentage share of all external sources		
	WCF	NWCF	Different significant at
Customers	21	10	0.001
Suppliers	15	8	0.050
Bankers	8	9	0.050
Advertising agents	4	9	NA
Agent and distributors	9	11	NA
Consultants	6	7	0.050
General publications	14	19	NA
Trade publications	14	16	NA
Trade shows	5	7	0.050
Others	4	6	NA

NA = Not available

Perceived environmental characteristics or individual perceptions about company strategy or about their own strategic orientation, do not have any significant influence on the use of different sources. Neither do perceived task characteristics.

FLOW OF ENVIRONMENTAL INFORMATION INTO THE ORGANISATION

So far in this chapter, a review of the different kinds of information the sampled managers acquire and the different sources they use was made. In this section factors and sources are put together so as to depict the way external information flows into the organisation. The question being addressed here is, how do the sources relate to the factors? Which sources are particularly useful for which factors? Different statistical methods to find answers to this question is employed.

Before the explanation of the methods being used here, a word is appropriate about the method that was not used. That is, that the respondents were not asked to directly estimate the relative usefulness for the different factors. To ask them to do so would have meant

presenting them with a 7*10 matrix (7 factors, 10 sources) to fill out and given the complexity of the question, the responses would have little reliability. However, in the absence of this direct data, all that the writer has, are the main distributions of the two variables (factors and sources), and the task becomes to estimate their joint distribution based on this available information about them. This was attempted by the use of three methods: First, using a simple cross tabulation process, then validate the crosstabs results using simple regression technique. Finally, an attempt (which however failed) to correlate the result using canonical correlation analysis.

The underlying premise of the crosstabs analysis is that of time spent in the common dimension that links the factors and sources. If a particular respondent spends an unusually large share of his scanning time on a particular factor, and also obtains most of his external information from a particular source, that source can be expected to be particularly useful for that factor. Thus, firstly, respondents who spend more than $(\mu_i + \nu_i)$ percent of his scanning time on factor i was identified (μ_i is the mean share of that factor for the entire sample and ν_i is the standard deviation). Also respondents who obtain more than $(\mu_j + \nu_j)$ percent of total external information from source j (where μ_j and ν_j have the the usual meaning) was identified. Then the two pieces of information was combined to identify the

number of respondents who spend more than $(\mu_i + \sigma_i)$ time factor i and obtain more than $(\mu_j + \sigma_j)$ percent of external information form source j. This is what was use as a rough estimate of the joint distribution of factor i and source j (Table 7:23)

Table 7:23 - Number of respondents recording a score of more than (mean + standard deviation) for both time spent on factors

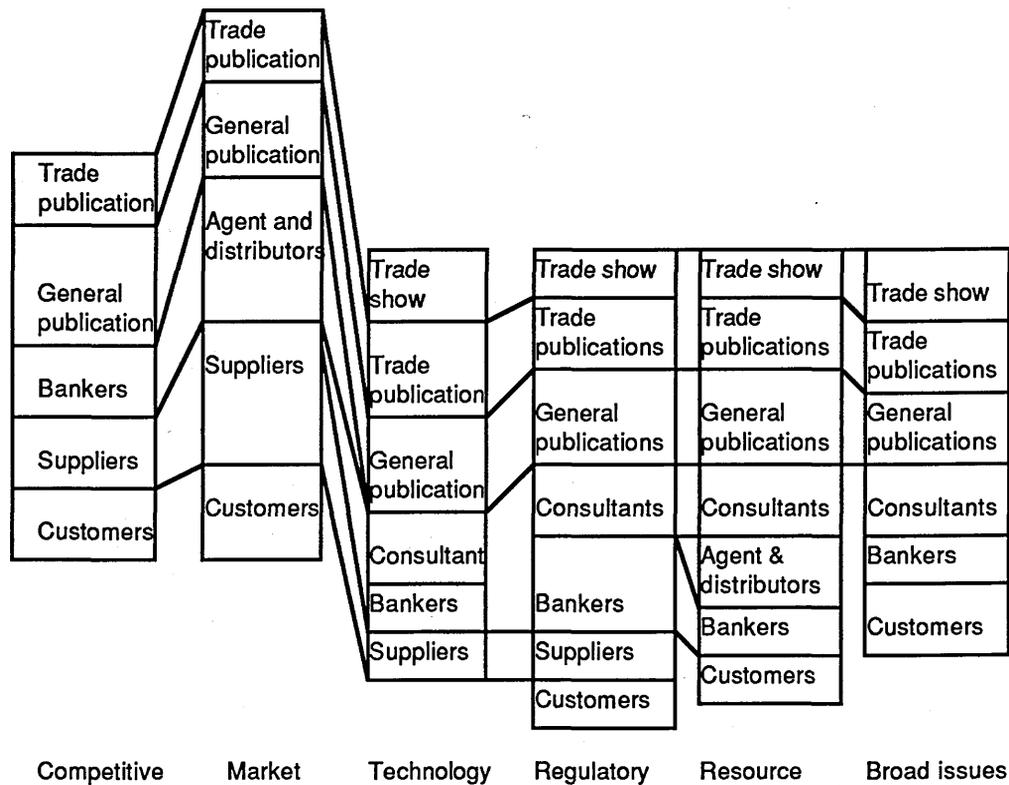
<u>Source</u>	Factors					
	Competitive	Market	Technology	Regulatory	Resource	Broad- issues
Customer	5	6	-	1	1	2
Suppliers	2	3	2	1	-	-
Bankers	2	-	1	3	2	1
Agent/ Distributors	-	4	-	-	1	-
Consultants	-	-	1	4	4	4
General/ Publication	1	1	1	2	2	2
Trade Publication	1	2	2	2	2	4
Trade Show	-	-	1	1	1	2

Figure 7:1 shows a graphical representation of the data in Table 7:23. The heights of the histograms represent the percentage of total scanning time spent on the factors. Each histogram is subdivided into areas that represent the relative importance of the different sources for that factor.

The resulting picture of how external information flows into an organisation conveys a clear message, for domain specific information such a competitive and market information, the principal sources are the other members of the domain - or, in simpler language, information specific to a business are available from those who are involved in that business. More general information such as information on regulatory developments or on

broad social, economic and political issues that are not specific to a particular business, is available from general sources such as publications and consultants who are not member of the domain. The picture is clearly oversimplified, because in certain cases, consultants may indeed be excellent sources for market or competitive information while, under certain circumstances, suppliers can be most useful for monitoring regulatory or social developments. But in general, the picture is not counter-intuitive. Most consultants or publications cannot really specialise in particular products or markets and must, in the interest of viability, spread their nets more widely across industries or functions. Insiders to a particular industry can be expected to have greater access to information specific to the industry. In a way, this finding is consistent with the appropriability theory of Von Hippel (1982). Information accumulates with those who can appropriate it most. Domain-specific information can be most disseminated fairly uniformly by domain members and, therefore, it is not surprising that they are the best source for such information. The findings also provides quantitative support for the "close to the customer" doctrine of Peters and Waterman (1980). Customers are not only vital agencies for innovation but also the principal source of market and competitive intelligence. This finding also suggests why staff scanning specialists may not be very effective in acquiring domain related business intelligence; they simply do not have the network required for such intelligence gathering. Line managers, with their regular contacts with customers, suppliers, agents and distributors, are far better equipped for such scanning, at least for the regular product-markets covered by the company. By the same logic, line managers may not be particularly suitable for scanning beyond the domain, for they often have relatively less access to sources such as consultants, publication, *et cetera*. Wellinsky had suggested long ago that both "experts" and line managers are required to be involved for building up organisational capabilities in the intelligence function. Figure 7:1 suggests why that must be so.

Figure 7:1 - Flow of external information into the organisation



The preceding analysis suffers from many limitations. The most serious one is that it is based on very little data - only the extreme tail ends of the distribution of factors importance and source usage scores. Regression analysis was therefore used as an alternative approach to investigate the same issue. The objective was to use all the data in this thesis to look for corroboration of the picture that emerged from the crosstabs analysis where only a small part of the data was considered. The factor scores were treated as the dependent variable and percentage shares of all the sources were treated as the dependent variables to identify the sources that emerge as significant explanators of differences in time spent on the factors. For two factors - market and technology - the regression results were unusable. The F statistics were not significant for any combination of the variables. However, significant F scores were obtained for the other factors (Table 7:24) and the results are not inconsistent with the findings shown in Figure 7:1. Customers, suppliers,

bankers and trade publications are identified as important sources of competitive information. All these sources, more or less in the same order of importance, were identified through the cross-tabulation procedure. For more general information, such as information on the resource factor, bankers and consultants emerge as the significant sources - again consistent with the findings from the preceding analysis.

Table 7:24 - Association between sources and factors :
regression results.

	Customers	Suppliers	Bankers	Advt./ agents	Consultants	General publication	Trade publication	Others	F Values
Competitive									
beta	0.48	0.17	0.21				0.31	0.16	6.49
t	5.07	1.73	2.16				3.03	1.74	0.00
sig. of t	0.00	0.09	0.03				0.00	0.08	
Regulatory									
beta			0.27		0.27				9.61
t			3.08		3.06				0.00
sig. of t			0.00		0.00				
Resource									
beta			0.20		0.14				4.47
t			2.12		1.52				0.04
sig. of t			0.04		0.13				
Broad issue									
beta				0.27	0.25	0.19			6.54
t				2.97	2.79	2.08			0.00
sig. of t				0.00	0.01	0.04			

Canonical correlation analysis was the third procedure adopted to validate the pattern of association between factors and sources. This is a multivariate procedure that assumes the factor scores as mutually interacting dependent variables and the sources scores as joint covariants. The analysis extracts linear composites of variables from the two sets that are maximally related (see Joreskog and Wold, 1982) for explanation of the procedure and for an illustrative application of such analysis). The analysis confirmed that the predictor set (sources) has statistically significant impact on the predicted set (factors). The multivariate F statistics was 1.964, significant at 0.001. However, in terms of specific association between factors and sources the technique was not very useful, for it extracted only one

significant canonical function. The reason is quite simple; domain related scanning of competition, market and technology using within domain sources such as customers and suppliers dominates managerial scanning, and is the only significant cluster of associations that swaps the analysis.

At the time of the writing of this thesis, the writer is not aware of any previous studies that have tried to identify sources useful for specific kinds of information. To that extent, the focus here is to identify the association between factors and sources that can probably be considered as a first step to explore empirically an area that has obvious importance for practitioners. In any case, it has all the weaknesses of a first step. The evidence is not strong and the association shown in Figure 7:22 are, at best, suggestive. But the pattern of associations suggested in this analysis is derived from what the actual practice of the sampled managers would seem to suggest. And, as had already been argued earlier, the excellent performance of Malaysian managers in highly competitive ASEAN and international markets is suggestive of efficient scanning. To that extent, the associations may have a normative content. Clearly, however, considerable further research in a number of different organisational settings would be required before any prescriptive help can be given to managers about the general usefulness of specific sources for different kinds of information.

Chapter Eight

The process of scanning

CHAPTER EIGHT

THE PROCESS OF SCANNING

Scanning can be both problem triggered and information triggered (Collings, 1968). In the first case, a specific problem may suggest the information needed for solving it and scanning can then be directed to searching for that information. In the later case, a particular piece of information obtained quite by chance, may suggest a course of action (including searching for further information). However, to benefit from such information that a manager may stumble on, he must be sensitive to the implications of information that continuously flow to him in the routine course of his work. The first process is called the *search* mode of scanning; the second is referred to as *surveillance* (Keegan, 1968).

In this chapter, the typology of scanning modes is elaborated on a rather more detail, and then after that, description of the relative use of different modes by managers responding to the survey is to be subsequently made. It will also be shown that the pattern of usage of different modes by Malaysian managers is very similar to the corresponding behaviour of manager in American companies as revealed through earlier research findings. In addition to that it will also be shown that the use of different modes is influenced by a number of personal, organisational and environmental factors as discussed in chapter two. In the conclusion of this chapter, the findings are to be related to the conceptual framework of Daft and Weick (1984) that suggests how organisational and environmental characteristics might affect managerial scanning behaviour.

SCANNING MODES

As has been noted the process of scanning was conceptualised by Aguilar in terms of the extent of structure built into the way scanning was carried out. He classified the modes of scanning as *undirected viewing*, *conditioned viewing*, *informal search* and *formal search*, in an ascending order of specificity of information and the extent of structure in the viewing process. Collings (1968) and Keegan (1967) adopted the same type of classification but called the modes *viewing*, *monitoring*, *investigating* and *research*. Each of the modes were defined as below:

Viewing :

Viewing is keeping in touch with the environmental through oriented exposure to information which might be relevant to a person's job or organisation. This mode is more focussed than random or even general curiosity but less focussed than monitoring or directed exposure. The objective of viewing is to acquire background information and to pick up warning signals on matters which may become significant or relevant - to quote Aguilar, "to give the first dull impression that there is something more to be learned".

Monitoring :

Monitoring is focussed attention to a more or less clearly defined information subject agenda or information sources. The agenda may undergo a constant change but, at any point of time, it exists and can be enumerated.

Investigation :

Investigation is a relatively limited informal system of seeking out specific information. It involved an active seeking out as contrasted with the more passive watching over or surveillance involved in monitoring.

Research :

Research is formally organised effort to acquire specific information, usually for a specific purpose. Research is typically an effort to answer a formulated questions and it usually has definite start and end points.

In the research instrument for this study, these definitions were explained to the respondents and they were asked to indicate the shares of external information acquired by them through the different modes (see Appendix 1). The result are summarised in Table 8:1.

Table 8:1 - Usage of different scanning modes

	% of external information obtained
Viewing	23
Monitoring	27
Investigation	30
Research	21

Testing validity of responses.

Given the relatively complex constructs for the classification scheme for scanning modes, it was felt necessary to test the validity of the responses and to see if needed, the respondents understood the differences implied in the definitions. As Keegan had

suggested, the *viewing* and *monitoring* modes, collectively, represents a general surveillance while the *investigation* and *research* modes involve specific search. Information obtained through surveillance is, to a degree, obtained by chance, for the recipient was not looking for it. In other words, there ought to exist positive associations between the relative use of *viewing* and *monitoring* and the extent of external information perceived as obtained by chance and between the usage of the *investigation* and *research* modes and the extent of external information believed to be received through specific search. *Chance* and *search* are relatively simple constructs that are generally well understood. So, in order to test the validity of responses about the usage of the four scanning modes, a question was asked, in a separate section of the questionnaire, that required the respondents to estimate the percentages of external information they obtained by *chance* and through *search*. The correlations between the responses to these two different questions are shown in Table 8:2.

Table 8:2 - Response validity for scanning modes

		Percentage of external information obtained	
		Search	Chance
Percentage of external information obtained	Viewing	- 0 38 **	0.26**
	Monitoring	-0.01	0.08
	Investigation	0.28**	- 0.20
	Research	0.15**	- 0.11

* Significant at 0.10

** Significant at 0.01

*** Significant at 0.001

The signs of all the coefficients are in the right direction and five of the correlations are significant. The constructs are not entirely overlapping and therefore, the actual values of

the coefficients are not interpretable. However, overall, this pattern of associations tends to suggest that the respondents understood the meaning of the different scanning modes and that the responses have at least face validity.

Comparison with previous findings.

Table 8:3 compares the usage of modes by the sampled Malaysian managers with those of U.S. managers found in earlier surveys.

Table 8:3 - Comparison of scanning modes : Malaysian and U.S. managers

	Percentage of external information obtained through:			
	Viewing	Monitoring	Investigation	Research
Malaysian managers	23	27	30	21
U.S. managers				
: Collings' survey	40	42	12	6
: Keegan's survey				
- local	13	60	23	4
- overseas	7	59	30	3
: Kefalas' survey				
- dynamic industry	25	27	25	23
- stable industry	23	21	25	30

As can be seen from Table 8:3, the findings of Kefalas are very different from those of Collings and Keegan. The research findings in Malaysia are remarkably similar to those of Kefalas. Malaysian managers, compared to managers in American multinationals or in the U.S. financial services industry, use the search mode much more. It can be seen from Keegan's results that search takes on added importance in scanning outside the firm's home market. This also appears plausible, for in the home environment, the firm

is much more closely integrated with the industry network and the resultant familiarity and involvement with the environment makes surveillance relatively more effective. In foreign markets, the firm has to make special effort to acquire information and therefore rely more on search. In Malaysia, almost all major firms, and certainly all firms included in the sample, are involved in extensive international dealings and a major part of their scanning efforts is directed to foreign markets especially those of its neighbouring countries. Given this condition, the relatively greater use of search is not surprising.

Factors that influence relative usage of scanning modes.

It has been argued earlier in this thesis that surveillance is more effective when the firm has a wider network within the relevant environment. Among the sampled firms, the WCF (firms) have far more extensive networks (through their own establishments in many part of ASEAN and other countries) compared to the NWCF (firms). The argument therefore suggests that WCFs should be using the surveillance mode more than the NWCFs. The data provides weak support for this hypothesis (Table 8:4).

Management level does not have any significant effect on the choice of modes, though junior managers, predictably (because of their inferior network), depend relatively more on search than do their senior colleagues.

Table 8:4 - Usage of scanning modes by WCF and NWCF

	Usage of scanning modes (%)		
	WCF	NWCF	Significance difference
Viewing	23	22	-
Monitoring	29	24	0.02
Investigation	29	31	-
Research	19	24	0.07

The argument that search becomes more important when manager lacks a personal

network within the industry environment is also supported by the pattern of scanning by managers in different functional departments (Table 8:5).

Table 8:5 - Use of scanning modes in different functions

Percentage of scanning through different modes				
	Viewing	Monitoring	Investigation	Research
Marketing	29	29	30	14
Finance	22	34	29	16
Planning	21	22	30	27
R & D	22	25	28	25
General management	20	30	30	22

Marketing executives, with their large external networks, use viewing much more than others. Planning managers, in contrast, lack this external network and depend more on research. Finance managers occupy an intermediate position; they have a strong network within the financial community, particularly among bankers and stock market operators, but their networks are not as broad as those of marketing managers. They depend relatively more on monitoring.

A general experience with diversity enhances the use of surveillance (Table 8:6). As has been argued earlier that experience with diversity may increase a person's cognitive complexity and thereby his ability to capture the relevant out of the flow of information around him. In other words, he may develop a more sensitive antenna. Besides, it may also expand his network.

Table 8:6 - Effect of experience with diversity on usage of scanning modes

	Experience with diversity			Significance of difference
	Low	Medium	High	
Viewing	23	22	26	>0.10
Monitoring	28	23	32	0.07
Investigation	30	30	28	>0.10
Research	19	25	14	0.001

The *entrepreneur* depends more on surveillance; the *trustee* on search (Table 8:7). This is quite consistent with the respective stereotypes.

Table 8:7 - Effect of individual's strategic orientation on usage of scanning modes

	Entrepreneur	Trustee	Significance of difference
Viewing	23	22	>0.10
Monitoring	30	24	0.04
Investigation	30	30	>0.10
Research	17	25	0.01

By far the most significant effort on the usage of scanning modes arise from the nature of the environment. In an unpredictable environment, the two search modes become more important (Table 8:8) - perhaps because in the face of possible discontinuities, mere sensitivity to the present is not very useful for predicting the future.

Table 8:8 - Effect of environmental predictability on usage of scanning modes

	Percentage use of different scanning modes		Significance of difference
	Predictability	Unpredictability	
Viewing	24	22	>0.10
Monitoring	29	25	0.09
Investigation	29	30	>0.10
Research	19	23	0.06

Similarly, if the environment is seen as heterogeneous, search becomes more important as a scanning mode compared to when the environment is seen as relatively homogeneous (Table 8:9).

Table 8:9 - Effect of environmental heterogeneity on usage of scanning modes

	Percentage use of different scanning modes		Significance of difference
	Homogeneous	Heterogeneous	
Viewing	25	20	0.05
Monitoring	27	26	>0.10
Investigation	28	31	>0.10
Research	19	24	0.03

Figure 8:1 shows the overall effect of the two dimensions of the perceived environment on the way scanning is carried out. In a predictable and homogeneous (*i.e.*, non-

complex) environment scanning is more a process of surveillance; and of a general sensitivity to the external world. In a complex environment, with a number of actors and influencers and a high degree of unpredictability, surveillance is less effective perhaps because issues are more complex and it is no longer possible to make sense of them intuitively.

In such a complex environment, more directed attention is required for interpreting the signals and therefore search becomes relatively more important.

Figure 8:1 - Effect of environmental characteristics on usage of scanning modes

Environmental Predictability	Unpredictable	Surveillance 50% Search 50%	Surveillance 43% Search 57%
	Predictable	Surveillance 55% Search 45%	Surveillance 50% Search 50%
		Homogeneous	Heterogeneous
Environmental Heterogeneity			

THE ORGANISATIONAL INTERPRETATION MECHANISM.

In the first chapter, a reference to the recent conceptualisation by Daft and Weick (1984) of organisation as interpretation systems was made. The authors have suggested that the interpretation process is carried out in three stages: scanning, interpretation and learning. The interpretation mechanism in organisations, they argue, are influenced by their assumptions about the analysability of the environment and by the extent of their intrusiveness, by which term the authors actually refer to the pro-activeness of the organisation in learning about the environment.

Based on this conceptualisation, the authors proposed a model that relates organisational scanning and strategy making behaviour to these two influencing factors. Figure 8:2 shows the predicted scanning behaviour of organisations, depending on their assumptions about the environment and on their intrusiveness.

Figure 8:2 - Scanning and the organisational interpretation process (Daft and Weick, 1984)

Assumptions about the environment	Unanalysable	Undirected viewing	Enacting (experimenting rather than scanning)
	Analysable	Conditioned viewing	Formal search
		Passive	Active
		Organisational intrusiveness	

The authors proposed the model at the organisational level. But, the variables they use and the theoretical arguments they make, are essentially based at the individual level. They use a classification system for scanning modes that was proposed and used by Aguilar for describing scanning behaviour of individual managers. Clearly organisations do not view nor search; individual do. Daft and Weick also based their construct and argument about the learning mechanism on an individual level learning model. Even for the environment, they consider perceptions which apply only at the individual level. Thus, the model can be operationalised at the individual level, though it is not clear if the results can be interpreted at the organisational level. The model was tested, at the individual level, using the available data. The results are shown in Figure 8:3.

Figure 8:3 - Intrepretation modes at the individual level

		Low	High
Environmental predictability	Unpredictable	Viewing 23% Monitoring 24% Invstgtn 30% Research 23%	Viewing 22% Monitoring 25% Invstgtn 30% Research 23%
	Predictable	Viewing 25% Monitoring 32% Invstgtn 26% Research 17%	Viewing 23% Monitoring 27% Invstgtn 31% Research 21%

The test fail to discriminate between the four cells; the scanning processes of *defenders*, *prospectors* and *analysers* appear to be extremely similar. All the three are significantly different from the scanning process *reactors* (Miles and Snow typology, as used by Daft and Weick). The principal scanning mode of the *reactor* is surveillance, particularly *monitoring* or *conditional* viewing. This is entirely consistent with the suggestion of Daft and Weick. However, the main effect of environmental unpredictability does not go the way Daft and Weick proposed. In an unpredictable environment, managers in both the intrusive or, in the operationalisation usage in this thesis, analytically oriented firm as well as the passive or unanalytic firm; tend to expand their search activities. This is entirely consistent with the information processing view of organisations and challenges the perceptions that, in the face of high uncertainty, managers give up on analysis and fall back on either passive floating or "enacting". This inconsistency between the findings in this thesis and the conceptualisation of Daft and Weick may be entirely an artifact of the sample and methodology employed in this thesis. May be, none of the organisations included were truly passive; after all, they were selected from a list of large and highly successful Malaysian firms. Their conceptualisation as analytical or otherwise is essentially related to the rest of the sample and not to any absolute standards.

Similarly, the perceived environmental characteristics have also been categorised relative to the sample and may not correspond to the conceptual definitions of the authors. Besides, organisational intrusiveness is a concept that is closely related to, but is not synonymous with analytical orientation as defined in this study.

Finally the model and the data pertain to two different levels of analysis, even though, as has already been argued earlier, the conceptual support for the model is built at the individual rather than the organisational level. So, both the consistencies and the inconsistencies between the Daft and Weick model and the data in this study need to be interpreted with caution. Broadly, there is one area of consistency : managers of passive firms in an analysable environment depend more on monitoring than do any managers of any other kind of firm. The main inconsistency is with regard to the effect of perceived environmental characteristics. Contrary to the prediction of Daft and Weick, managers sampled in this thesis, irrespective of the strategic orientation of their firms, enhance search activities when the environment is perceived to be unanalysable. A much more precisely defined measurement model is required to further explore the concept of interpretation systems proposed in the conceptual model but the inconsistency suggests an interesting hypothesis for such analysis.

Chapter Nine
A model of individual level scanning
behaviour

CHAPTER NINE

A MODEL OF INDIVIDUAL LEVEL SCANNING BEHAVIOUR

This is the last of the four chapters that address the first of the two broad research questions of this thesis, *viz.*, what affects the scanning behaviour of managers? The particular aspect of scanning behaviour that is considered here is the extent of domain-focus. The concept is elaborated later but the central hypothesis is simple: for long term adaptation to environmental changes, an organisation must look beyond its immediate task environment. Yet, most managerial scanning is centred around the current domain of the organisation. What factors promote managerial scanning of the broader environment? This chapter is devoted to answering that question.

The issue is important for both theory and practice. At the level of theory, identifying the factors that affect scanning attention, can help in developing an understanding of the organisational learning and adaptation processes. With regard to practice, such an inquiry may suggest managerial actions to promote long term effectiveness of the firm.

This chapter begins with an explanation of the concept of domain-focus and then propose a causal model that suggests how the extent of domain-focus in managerial scanning may depend on both direct and mediated influences of a number of factors. The final model confirms many of the proposed hypotheses but it also challenges a few of them. The implications of these findings are discussed at length and this discussion, in turn, becomes the basis for a model of the organisational learning that is proposed in the chapter that follow (and the concluding chapter of this thesis).

SCANNING CHARACTERISTICS : DOMAIN-FOCUSSED VERSUS GENERAL

One of the older debates in the field of Business Policy has been between what Mintzberg (1973, 1978) calls the "planning" and the "adaptive" models of strategy formulation. Historically the two sides to the debate have followed non-intersecting parallel paths. Proponents of the planning view (*e.g.*, Andrews, 1980, rev.) have based their arguments on normative models of how purposeful organisations (or leaders) should behave. Supporters of the adaptive view, in contrast, have depended on deductions from empirical observations. They (*e.g.*, Pettigrew, 1973; Quinn, 1980) have shown that in actual practice organisations do not follow the "rational" process assumed in the normative models. Organisations are constrained by cognitive limits to rationality and by the heterogeneity of objectives and agenda of internal members. Strategy formulation, according to the adaptive view, is an incremental process of navigating along the corridors of indifference; of internal bargaining and coalition building that become manifest as a stream of disjointed decisions. Thus, they have rejected the planning view, labelling it as a "heroic view of management" that is both unreal and unrealisable. Believers of strategic planning, in turn, have repudiated the incrementalist view as neither accurate nor useful. A recent rebuttal from Andrews is typical:

"There is something to be said, I must admit, for the owlish adherents to the primacy of incrementalism and administrative process. Repelled by the best and brightest analysts, they asserts the wisdom of the practitioner and believe that an organisation, properly nurtured, can lay out like a snail in the path of its own progress. So it can, but the path is visible only behind the snail. Those who believe that life is too uncertain to permit planning and that purpose must remain mostly intuitive, are a kind of Greek chorus keeping the rest of us honest while they hymn their classic cop-out". (Andrews, 1983, p3).

Only recently a conceptual synthesis is emerging out of this debate. The synthesis is perhaps best summarised in a paper by Burgelman (1983) where he argues that the strategy of a firm has both an autonomous and an induced component (Mintzberg, in his 1987 paper, called them deliberate and emergent components of strategy). To quote:

"'Induced' strategic behavior uses the categories provided by the current concepts of strategy to identify opportunities in the 'enactable environment' (Weick, 1979). Being consistent with the existing categories used in the strategic planning system of the firm, such strategic behavior emerge around, among others, new product development projects for existing business, market development projects for existing products, and strategic capital investment projects for existing businesses. Such strategic behavior is shaped by the current structural context...This is the type of strategic behavior documented by Bower (1970). It follows corporate strategy...

During any given period of time, the bulk of strategic activity in a firm is likely to be of the induced variety. The present model, however, proposes that large, resource-rich firms are likely to possess a reservoir of entrepreneurial potential at operational levels that will express itself in autonomous strategic initiatives. *Autonomous* strategic behavior introduces new categories for the definition of opportunities. Entrepreneurial participants, at the product/market level, conceive new business opportunities, engage in project championing efforts, and mobilize corporate resources for these new opportunities, and perform strategic forcing efforts to create momentum for their further development. Middle level managers attempt to formulate broader strategies for areas of new business activity and try to convince top management to support them. This is the type of strategic behavior encountered in the study of internal corporate venturing". (Burgelman, 1983, p.65)

Burgelman's conceptualisation is useful. He argues convincingly why strategy of a firm should have the two components. However, he does not go into the issue of how the two kinds of strategic behaviour actually manifest themselves within the formal strategic planning process of the firm.

There is sufficient empirical literature that documents the increasing use of formal planning in large business institutions. In their three-year, multiphased study involving over 1,500 of the world's largest corporations, Klein and Linneman (1984) have shown that over 90% of such companies have fairly extensive systems for long term planning and that most of these systems are at least designed to achieve the "rationality" implied in the normative models. Yet, as Burgelman argues, the output of the system is not fully "autonomous". The question then becomes this : how does "induced" strategy emerge out of the process of "rational" formal planning that most modern firms adopt? In other words, what is the process through which, in the planning mechanism, the current strategy or structure of the the firm affect its future strategy?

Bower (1970) had provided one answer to this question - an answer that focussed on the internal process through which problems are defined, alternative proposals are initiated and, finally, one of the proposals receive the "impetus" that leads to its acceptance. Internal structure, in the process model of Bower, affects strategy by influencing these sub-processes of definition, initiation and impetus.

Scanning, can be another mechanism through which current strategy, despite an intendedly rational planning process, can circumscribe further strategy. Scanning is assumed to provide the external intelligence that is the starting point for all normative strategic planning models. If, however, the current situation of the firm determines

what aspect of the environment will be paid attention to (*i.e.*, the enactment process of Weick, 1979), then even if the actual strategy making process follows the normative models, the output may be incremental or, in Burgelman's terms, induced strategic behaviour.

If scanning is entirely limited to what Dill (1958) called the "task environment" and Thompson (1967) called "domain", the information base on which future strategy will be based is limited to the current activities of the organisation. Such scanning cannot lead to ventures in new fields - to "autonomous strategy" as defined by Burgelman. For autonomous strategy to emerge, the planning process must have an information input that is not constrained by current understanding of what the firm's domain is: *i.e.*, a part of scanning must look beyond the task environment to the broader "general environment".

Therefore, an important issue in studying scanning behaviour is the extent to which scanning is either limited to the current domain or extends beyond it. This is the topic that this chapter addresses. First of all a method to characterise scanning as domain-focused versus general, is developed then after that, the respondents will be classified according to their characteristics based on this categorisation scheme. Finally, the effect of different environmental, organisational and individual level variables is analysed in determining the scanning characteristics of managers.

OPERATIONALISING SCANNING BEHAVIOUR

To operationalise scanning behaviour in terms of the extent to which it is domain-constrained, functional definition of what might be called "domain-focused" and "general" scanning is needed. In this thesis, three major attributes of scanning is considered - the kinds of information scanned (the factors), the sources through which

information is acquired, and the modes of acquisition. Among them, both factors and sources are related to the concept of domain and it is through them that the functional distinction between the different kinds of scanning behaviour is operationalised.

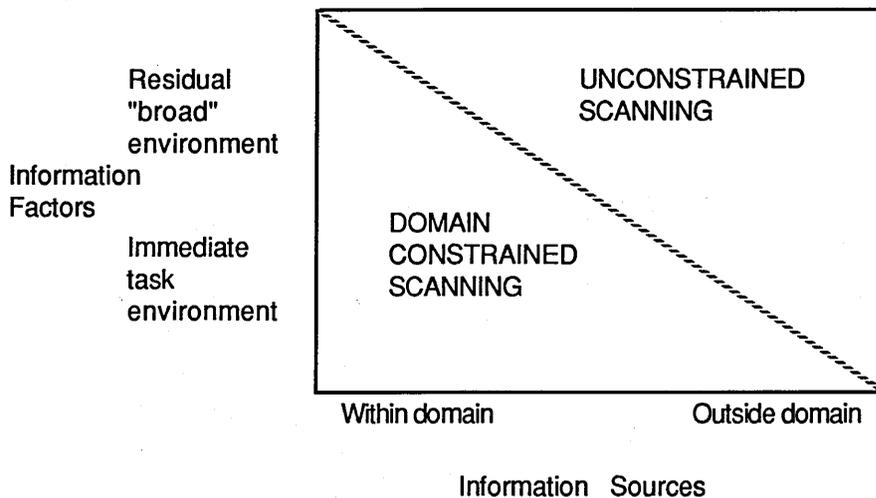
The concept of a "domain", as developed by Thompson (1967) is based on the notion of the "task-environment" suggested by Dill (1958) as those parts of the broader environment which are relevant to the setting and attainment of goals. Specifically, Dill suggested that the task environment consists of customers, suppliers, competitors and regulatory groups. These, according to Thompson, constitute the membership of the firm's domain. A concept quite similar to that of the domain, is the notion of "organisation-set" developed by Evan (1966). Defining members of a focal organisation's organisation-set is a subjective task and "there may be as many organisation-sets as there are different status for an organisation to occupy" (Aldrich and Whetten, 1981). However, generally, the important members of the set are those who are members of the organisation's task-domain, for ultimately both the concepts are tied together through the notion of goals-membership as both are determined by the actors who can affect the organisation's attainment of goals (Caplow, 1964).

Following these arguments, this thesis defines domain-constrained scanning as scanning for information related to the current task-environment and obtained through other members of the domain. In other words, information about market, competition and technology obtained through customers, suppliers and agents and distributors, characterise domain-focussed scanning behaviour. In contrast, information about general regulatory, social, political, economic or resource-related issues obtained through publications, consultants, advertising agents *et cetera*, characterises what the writer likes to call unconstrained scanning.

The underlying scheme for categorising scanning behaviour is shown in Figure 9:1. Note that the division between the two types of scanning behaviour is fuzzy and the

distinction is made primarily in terms of what is the principal component of the manager's scanning activity.

Figure 9:1 - Categorisation of scanning behaviour



To operationalise the construct, two scales were constructed. The "TASKINFO" scale added the respondents scores on the percentage of time spent on market, competitive and technology related information. The "ORGSET" scale added their scores on the percentage of environmental information collected through the principal members of their firm's organisation-set, *i.e.*, customers, suppliers and agents and distributors. Both the scales showed acceptable reliability (cornbatche's alpha of 0.67 and 0.64, respectively). Finally, a composite scale of "DOMAINFOCUS" was built by adding the two scale scores for each respondent. A high value on this scale showed a highly domain-focused or constrained scanning behaviour.

A low score, on the other hand, represented broad and unconstrained scanning. This composite scale was tested for reliability and found acceptable (Cornbatche's alpha 0.59). The scale had a mean value of 98.782 and a standard deviation of 34.357. Scores of individual respondents ranged from 25 to 175.

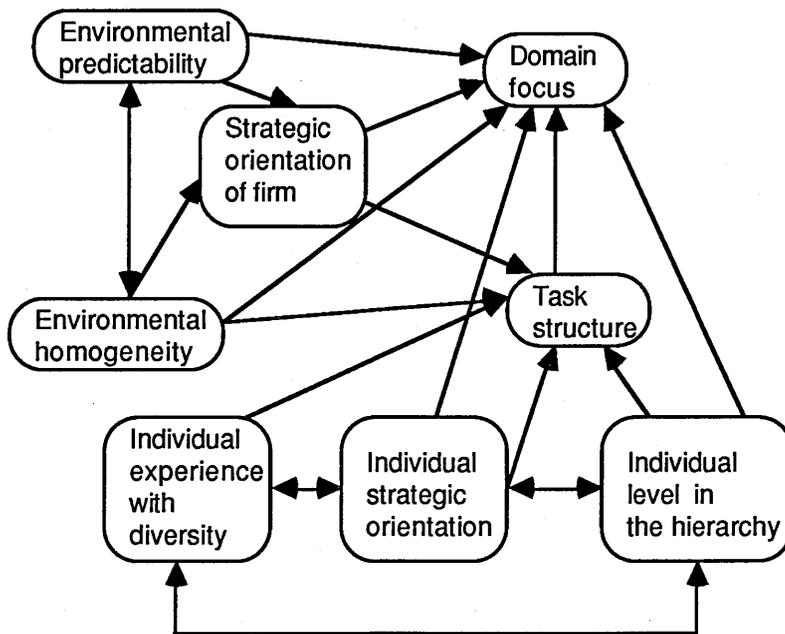
The central argument of this thesis is that scanning behaviour of individual managers is influenced by a number of environmental, organisational, and individual characteristics. So far, the writer has explored the nature of these influences separately and individually on different aspects of scanning (chapter six, seven, and eight). In the ensuing part of this chapter, the writer proceeds to the next level of analytical complexity by considering, collectively, the effect of the different influencing variables on what he proposes as a composite measure of scanning behaviour. This is done by building a causal model that attempts to explain the influences that determine the extent of breadth versus focus in the managerial scanning. The model is first developed based on available theoretical concept and then tested against the data.

The research methodology of this thesis is inappropriate for proving causation. In any case, the technique (using LISREL - Joreskog and Sorbom, 1982) that is used, can never prove a model but can only disprove it. There is also no alternative model to test the writer's proposed model against. The most optimistic objective is internally consistent, theoretically acceptable, and is not rejected by the data.

MODEL AND HYPOTHESES

The proposed model is shown in Figure 9:2. The conceptual arguments underlying it are summarised below.

Figure 9:2 - A model of individual level scanning behaviour



The more unpredictable the environment is perceived to be, the more does a manager feel the need to monitor a diverse range of issues. In a predictable environment, there is a linearity - a continuity - and the continuity often arises from a relative stability in the task environment. When there is such a stability, say, due to the existence of a stable oligopoly, there is usually an effective signalling system within the domain and it suffices if these signals are monitored and responded to. In other words, in a predictable environment, the needs of external intelligence may be served by monitoring existing members of the domain. In an unpredictable environment, in contrast, the cause of uncertainty may lie in the instability of the domain itself and a broader range of

environmental actors and issues may need to be monitored to cope with uncertainty.

Hence it can be hypothesised that:

Hypothesis 1 :

When the environment is perceived as predictable, scanning will be domain-constrained. In an unpredictable environment, scanning will be relatively unconstrained. Given the nature of the scale used in this thesis (high score on PRED scale represents unpredictability; high score on DOMAINFOCUS represents high domain-constrained scanning), this implies γ_{31} will be negative.

Environmental analysis is a response to environmental uncertainties. An integral argument of this information processing view of organisations is that the more the perceived uncertainty in the environment, the more will be the need for the organisation to develop an analytical orientation. Hence, in the model, analytical orientation of the firm is not taken as an independent variable but as a variable that depends on the perceived environmental characteristics. However, environmental predictability and environmental heterogeneity are expected to affect the need for analysis differently. As argued by Daft and Weick (1984), when the environment is seen as unpredictable, experimentation rather than analysis is used to cope with uncertainty. An environment is unpredictable because either the causal relations between actions and outcomes are unknown or because there exists discontinuities that cannot be anticipated. Under such circumstances, analysis is of little value. This inverse relationship between environmental unpredictability and analysis has been noted by Kobrin *et al.*, (1980), Boulton *et al.*, (1982) and Keegan (1974). In contrast, when the environment is heterogeneous, the need for analysis goes up for a large number of actors and issues need to be monitored. This lead to the hypotheses:

Hypothesis 2 :

In an unpredictable environment, the company will be less analytically oriented. This implies that γ_{11} will be negative.

Hypothesis 3 :

When the environment is perceived as heterogeneous, the firm will be more analytical in its approach; i.e., γ_{12} will be positive.

Further, a heterogeneous environment results in a very large organisational networks (Aldrich and Whetten, 1980) and it becomes increasingly difficult to define a domain parsimoniously enough for the term to have any practical connotation or to limit scanning attention to any specified set of actors to which the firm is directly linked. At the limit, in the case of extreme heterogeneity of the environment, the entire environment becomes a part of the firm's task environment. Thus, as the environment is perceived to be more and more heterogeneous, scanning has to become broad, involving more and more environmental actors. In other words,

Hypothesis 4 :

In a heterogeneous environment, scanning will be relatively unconstrained. This suggests that γ_{32} will be negative.

The greater the heterogeneity of the environment, the greater is the amount of information that has to be processed by the manager to cope with environmental uncertainty. Also, as shown by Daft and Macintosh (1981), the amount of environmental information processed by a manager is positively associated with his perception of task variety. This finding can be extended to suggest that when a manager perceives his environment to be heterogeneous, he also perceives his task to be unstructured. This is plausible for the multiplicity of issues that need to be considered for effective task performance (the cause of environmental heterogeneity) is an essential feature of an unstructured task (Perrow, 1967). Therefore:

Hypothesis 5 :

When the environment is perceived to be heterogeneous, the respondent will perceive his task to be relatively unstructured. In other words, γ_{22} is positive.

A strong emphasis on analysis is usually associated with a firm's commitment to its current domain. Analysis is useful when there is some understanding of the causal effect of events on outcomes. The further away one goes from the immediate task environment, the more difficult it becomes to discern such causal implications. Innovation and risk-taking rather than analysis are the characteristics of firms that look for opportunities in the broader environment. Managers in highly analytical oriented firm focus their scanning within the task environment, for it is only such domain-constrained information that are amenable to formal analysis, Or,

Hypothesis 6 :

The more analytically oriented the firm, the more is scanning restricted to the current domain, *i.e.*, β_{31} is positive.

An individual's experience with diversity enriches his cognitive script (Abelson, 1976) and enhances his capacity to deal with ambiguities. A manager more exposed to diversity feels less compelled to limit the ambiguity and equivocality in his task (Daft and Macintosh, 1981; Kiesler and Sproull, 1982). He is more willing and able to see the ill-structured aspects of his tasks and to acknowledge rather than ignore the multiplicity of issues and influences that must be considered in managerial judgment and decision-making. Therefore,

Hypothesis 7 :

The greater the manager's experience with diversity, the more he will recognise the unstructured aspects of his tasks. In terms of the model, therefore, γ_{23} is positive.

In this thesis, the individual's strategic orientation has been categorised as *entrepreneurial* or *trustee-like*. The *trustee* has the characteristics of bureaucrat; he

attempts to find standard operating procedures and rules and he sees his task as relatively structured. He ignores those aspects of the job that are ill-structured and not amenable to standardisation or formalisation. He avoids complexity and ambiguity. His simple schema does not require him to explore the equivocal and often weak cues from the broader environment. The *entrepreneur*, in contrast, typically explores the broad environment for opportunities and is more willing to acknowledge the ill-structured aspects of his managerial tasks. Two hypotheses follow:

Hypothesis 8 :

The more entrepreneurial the individual, the more unstructured he perceives his task to be. In the ENTRT scale, high scores represent the trustee and low scores characterise the entrepreneur. Therefore, in the model, γ_{24} should be negative.

Hypothesis 9 :

The more entrepreneurial the individual, the more unconstrained is his scanning, or, γ_{34} is positive.

Information and, extension, analysis act as symbols and as signals that guide managerial actions and perceptions (Feldman and March, 1981). The more analytical a firm is, the more it creates an internal environment that suggests analysis to be the basis for decision and actions. But, the essential characteristics of ill-structured tasks is that they are not amenable to formal (and quantitative) analysis because of the variety and ambiguity inherent in them. Therefore, in companies where analysis is emphasised, a linearity of thinking will prevail and managers will see their tasks as more structured, or

Hypothesis 10 :

The more analytically the firm is oriented, the more structured managers see their tasks to be. Stated otherwise, β_{21} is negative.

The higher the position a manager occupies in the organisation hierarchy, the less is the extent of internal differentiation (Lawrence and Lorsch, 1967) and the more unstructured are his tasks (Willensky, 1967). Compared to junior managers, decisions that a top manager has to take involve greater complexity and explicit or implicit consideration of a far diverse range of issues and influences. Top managers are more involved in long term decisions that are relatively more impacted by factors outside the current task environment of the firm, Hence,

Hypothesis 11 :

The higher up a manager in the organisational hierarchy, the more unstructured his task is, and appears to be. Therefore, γ_{25} is negative.

Hypothesis 12 :

The higher the position a manager occupies in the organisational hierarchy, the less constrained is his scanning. Or, γ_{35} is negative.

Finally, the more unstructured a manager sees his task to be, the greater is the variety and diversity of information that he needs to form the qualitative judgements that are essential to take decisions on unstructured problems. The whole notion of a domain becomes fuzzy, because when the task is unstructured, it is difficult to determine the actors who can affect the outcome of a particular course of action. Therefore, a broader attention to the overall environment rather than focussed attention to a particular part of it, characterises the scanning behaviour of managers who perceived their task to be highly unstructured. Hence the hypothesis:

Hypothesis 13 :

The more unstructured a manager feels his task to be, the more unconstrained becomes his scanning, *i.e.*, β_{32} is negative.

Therefore, to summarise the hypotheses in terms of the model presented in Figure 9:2,

H1 : γ_{31} is negative

H2 : γ_{11} is negative

H3 : γ_{12} is positive

H4 : γ_{32} is negative

H5 : γ_{22} is positive

H6 : β_{31} is positive

H7 : γ_{23} is positive

H8 : γ_{24} is negative

H9 : γ_{34} is positive

H10 : β_{21} is negative

H11 : γ_{25} is negative

H13 : β_{32} is negative

TESTING AND REFINING THE MODEL

The complete model includes eight variables that are linked together in a system of sixteen simultaneous equations. As a whole, the system is block recursive but individually the equations are non-recursive. Besides, the errors across the equations need not be uncorrelated. As such, application of ordinary least squares methods is inappropriate for testing the model. More complex estimation procedures such as multi-stage least squares or some maximum likelihood approach such as LISREL (Joreskog and Sorbom, 1978) is required for estimating and testing the model.

One of the principal objectives of the study is to build up an overall model for explaining variations in individual level scanning behaviour. Thus, the overall fit of the

whole model to the data is of greater interest than the testing of individual equations or even estimation of individual path strengths. Besides, structural equations associated with a causal model imply specific consequences for the moment structure of the data, specifically the variances and covariances of the measured variables. To quote Bentler (1980), "causation implies correlation- but of a very specific form. If the hypothesised caused process is correct, only certain values will be observed for these variances and covariances . . ." Any observed covariances other than the expected ones would be inconsistent with the proposed model . . .". Having proposed the model in a causal form, therefore, a covariance structure testing approach would clearly be more appropriate.

The general linear model developed by Joreskog provides such an approach. In its current form (LISREL VI), it allows for both maximum likelihood of ULS estimation procedures and, as shown by Burt (1950), the estimates are "optimally efficient . . . over variable sample sizes" and are "robust over nonnormality". It also provides overall goodness-of-fit indices for the model as a whole. This fact, as argued by Burt, "allows the researcher to determine how good one's model is and to diagnose an incorrect specification of cause and effect. It also provides a useful way to build theory". No other method, to the writer's knowledge, offers so many advantages in terms of this thesis specific research objectives. Accordingly, this method was adopted for testing and refining the proposed model.

In the model, there are six theoretical concepts (environmental predictability, environmental homogeneity, analytical orientation of the firm, extent of structure in task, manager's experience with diversity, and manager's strategic orientation) and one measured variable, *viz.*, manager's level in the organisational hierarchy. The conceptual variables, in terms of the methodology of structural equation modelling, are latent variables and a total of twenty-four measured variables are used as indicators for them. Moreover, the dependent variable, the extent to which managerial scanning is

domain-constrained, is another latent variable construct out of a total of seven measured variables. To build the model using all the concerned measured variables would require the inclusion of thirty-two variables and, following the arguments of Lawley and Maxwell (1971), a sample size of 111 rules out that option. Further, between two and three of the measured variables loaded significantly on the factors that, through the process of exploratory factor analysis, defined the measures of the latent variables. Thus, the sample size limitation prevents construction of even a simplified measurement model including only the most significant measured variables for each of the latent variables. The only alternative, therefore, was to use the measures of the latent variables as arrived through the factor analysis procedure, in other words, to use the latent variables as if they were measured variables. This ignores all measurement errors and prevents testing of the measurement model. In essence, therefore, the writer uses LISREL for its path analysis capabilities. However, at each stage of the analysis, the writer looked at the correlations between the different indicators and at the reliability of the composite variables. Besides, the objective is not to test theory, for there does not exist enough theoretical or empirical work on the topic to justify such approach. To test a theory using causal modelling, one must not only have a theory to test but also an equally believable alternative theory against which to test it. The attempt, therefore, is much more of an exploration of possible causation.

LISREL VI offers a choice between the unweighted least squares and the maximum likelihood estimator methods for parameter estimation. The ML method depends on the assumption for multinomial normal distribution of the variables but has the advantage of readily providing standard errors and t-statistics for the estimate. Thus ULS method does not assume any distribution for the variables, but does not generate either standard error or t-statistics for the estimates nor an overall statistic for goodness of fit.

Given that most of the variables in the model are either ordinal or are computed by summation scales of ordinal measured variables, ULS is clearly the theoretically superior method. However, the difference between the ULS and ML estimates of the parameters are usually small and so, the analysis, the ML method was used for model testing and refinement but the final model was also estimated on ULS.

Finally, before proceeding with estimating and testing of the model, it is necessary to check the system of the equations for identification. All the equations clearly pass the order condition, *i.e.*, the number of predetermined variables excluded from each equation is greater than the number of included indigeneous variables minus one. As the testing process show, they also pass the rank condition. Infact, all the equations are overestimated, thus making it possible to test a number of alternative causal paths besides the ones proposed in the model.

Model Building versus Model Testing

Instead of simply testing the proposed model and reporting the results, the writer adopted the approach of an interactive process of model testing, modifying and retesting. The original hypotheses provided the starting point of the refinement process. Parameters whose estimates are small compared to their standard errors are eliminated and the resulting model refinement is guided by the analysis of normalising residual of the variance-covariance matrix and legrange multipliers of the log likelihood function what Joreskog and Sorbom (1986) call "modification indices".

The problem associated with this approach is that in the absence of appropriate control, the final model may be strongly influenced by chance sampling error in the data. One way to control for this possibility is to split the sample into two halves so that one half can be used for model building and the other half can be used to provide a clean test of the developed model (Bentler, 1980). In this case, however, the limited sample size clearly ruled out this possibility.

The only solution available was to adopt a tight control on model-refinement so as to minimise the possibilities of "capitalising on chance". This was done by stopping the refinement process as soon as $p(x)^2 > 0.10$. as proposed by Lawley and Maxwell (1971), is most likely to correct real specification errors in the model without overcorrecting the model for spurious sampling error (reference in Anderson, 1976).

The initial run of the hypothesised model yielded results summarised in Table 9:3. As can be seen, for all but two of the thirteen parameters, the signs are as proposed in the hypotheses. But, the goodness-of-fit index is relatively poor (0.683) and all but five of the t-values are not significant even at >0.10 .

This result of the first run is provided only as a record of the starting point. All further discussions refer to the final model that emerged at the end of the refinement process.

Table 9:1 - The first run of the structural equation model

Parameter	Hypothesised sign	Lisrel estimate	Standard error	t-values
β_{21}	+ ve	0.079	0.106	0.744
β_{31}	+ ve	0.098	0.109	0.905
β_{32}	- ve	0.194	0.100	1.942**
γ_{11}	+ ve	-0.035	0.088	-0.398
γ_{12}	+ ve	0.475	0.930	5.118**
γ_{13}	*	-0.133	0.086	-1.558
γ_{14}	*	-0.143	0.090	-1.589
γ_{15}	*	0.090	0.087	1.033
γ_{21}	*	0.033	0.095	0.343
γ_{22}	+ ve	0.149	0.113	1.326
γ_{23}	+ ve	0.176	0.094	1.870**
γ_{24}	- ve	-0.246	0.099	-2.499**
γ_{25}	- ve	-0.063	0.095	-0.664
γ_{31}	- ve	-0.166	0.097	-1.707**
γ_{32}	- ve	-0.027	0.166	-0.238
γ_{33}	*	-0.015	0.097	-0.154
γ_{34}	+ ve	0.155	0.103	1.503
γ_{35}	- ve	0.036	0.097	0.373

* No association hypothesised

** Significant at 0.10

FINDINGS

Before reviewing the parameter values, it is desirable to review the overall goodness-of-fit. Thus ULS run of the model yielded an adjusted goodness-of-fit index of 0.985 and an RMS residual of 0.937. The total coefficient of determination for structural equations was 0.297 with ULS and 0.316 with ML. None of the variances were negative, no correlation coefficient was more than one. The correlations between the estimates were small, the largest being -0.297. The largest modification index was

2.18 (Gamma element 13) - less than the value of 5.0 suggested by Joreskog (1986) as positive indicator for further model trimming. The normalized residual plot has a slope very near one compared to the forty-five line (there is some skewness at the top).

The goodness-of-fit index in LISREL cannot be directly interpreted for it does not follow any known statistical distribution. All that can be said is that it sets an upper bound on the percentage of variance explained by the model (the coefficient of determination set the lower bound). However, as per Bentler (1982), such a measure of goodness-of-fit is "relatively high . . . and suggests that a major portion of the variance in the data is explained by the model as a whole". All the fact reported in the previous paragraph leads to the conclusion that the data does not reject the model. It should be repeated that the nature of the data in this thesis, the methodology of LISREL as well as the fact that the writer tests only the causal model and not the measurement model prohibit any claim of confirming the model. But the close data-fit along with the rather strong support to the theory derived hypotheses do indicate the model to be plausible.

Table 9:2 - The final model

Parameter	Hypothesised sign	ULS estimate	ML estimate	Standard error	t value
β_{31}	+ ve	0.095	0.096	0.095	1.003
β_{32}	- ve	0.178	0.187	0.096	1.936
γ_{11}	+ ve	0.420	0.450	0.087	5.163
γ_{22}	+ ve	0.211	0.183	0.097	1.884
γ_{23}	+ ve	0.165	0.167	0.093	1.797
γ_{24}	- ve	-0.246	-0.258	0.097	-2.660
γ_{31}	- ve	-0.171	-0.170	0.095	-1.798
γ_{34}	+ ve	0.136	0.151	0.098	1.544
β_{21}	+ ve	Not significantly different from zero. Hypothesised association			
γ_{12}	- ve	not confirmed.			
γ_{32}	- ve	The variable X5 (Management level) had			
γ_{25}	- ve	no significant relationship and was			
γ_{35}	- ve	dropped from the model.			

** significant at 0.05

* significant at 0.10

Table 9:2 - shows the path structure with the estimated parameters. The total effects of the different variables (relabelled to reflect the scale directions) on scanning behaviour are summarised in Table 9:3.

These findings and their implications are discussed in details later in this chapter. These findings must, however, be interpreted with caution in view of the many limitations of the methodology and of the data in this thesis. A review of these limitations precedes the discussion on the findings.

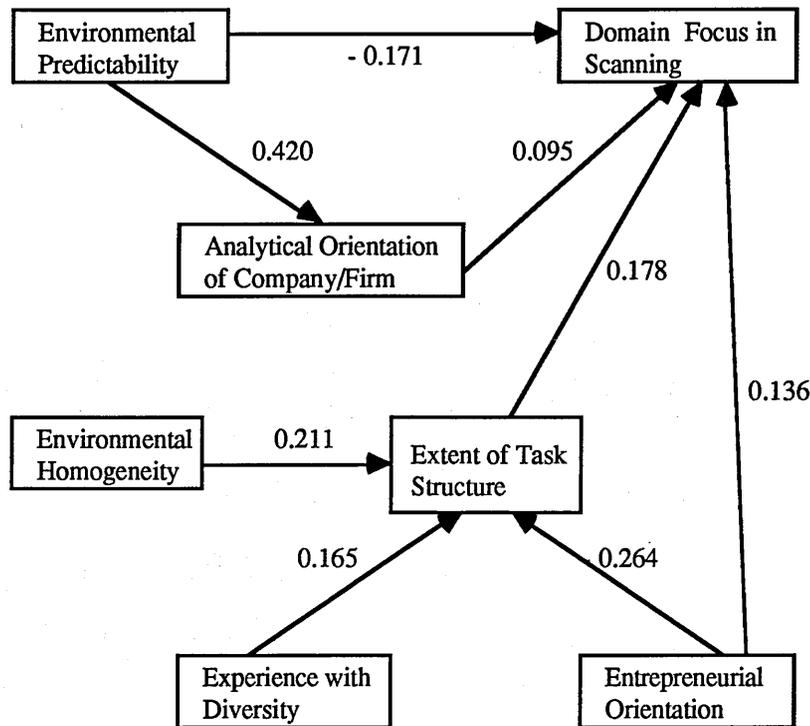
Table 9:3- Total effect of influencing factors on managerial scanning behaviour.

<u>Explanatory variables</u>	Total effect on individual scanning behaviour (extent of domain focus).
Environmental unpredictability	-0.171
Environmental heterogeneity	0.078
Individual's experience with diversity	0.029
Individual's trustee-ship orientation	0.089
Analytical orientation of company	0.095
Lack of structure in task	0.178

LIMITATIONS OF MODEL

There are clearly a number of reasons why these findings may be plain wrong. They may be due to modelling error - after all the model explains anything between thirty-two (coefficient of determination) and ninty-seven (adjusted goodness-of-fit index) percent of the variance and there can be many alternative models that may fit the data equally well and they may either not reflect these relationships or may even show significant relationship the other way. One difficulty with structural equation models not often highlighted by users of the methodology is that a number of different models with very different path-structures and path-strengths may fit the data equally well and the only claim that can be made on behalf of a particular model is that it is superior to another model that shows a worse fit with the data. Not having such an alternative model (few users of this technique ever have), even that claim cannot be made for the model adopted in this thesis. Besides, the relationships may be spurious, arising out of measurement error. Finally, they may be an artifact of sampling - caused by the non-random selection of institutions and individual respondents.

Figure 9:3 - Causal Path Diagram



Having laid out in such explicit details why the model and the relationships may be wrong, let us assume that they are not. After all, as was shown repeatedly, the survey data confirm many intuitive expectations. Most of the findings are also entirely consistent both with theoretically derived predictions and with findings of previous empirical research on the topic. There have been no strong reasons so far for questioning the reliability of the data used in this thesis. Most of the causal associations suggested by the model are intuitively plausible, anyway. Only two of the associations appear to be contrary to received wisdom. But, as the writer shall argue, even these relationships, though unexpected at first sight, are not entirely implausible in view of some recent and not-so-recent findings in the field of cognitive psychology.

INTERPRETATION

Out of the six total effects, four are consistent with expectations but the other two are not. As the environment is seen as unpredictable, individuals scan a broader sector, not limiting themselves only to their task environments. Note also the finding reported in chapter seven : in an unpredictable environment, *search* becomes more important than *surveillance*. This is consistent with a pattern that has manifest itself consistently in the data, *viz.*, that *surveillance* is more effective within the familiar territory of the immediate task environment and for collecting and understanding signals from the broader environment, a more directed attention is required. This is why sources such as consultants or publications are seen as more important for acquiring information on the broader environment and not for domain related information. Within the firm, staff specialists act as instruments of search. They are most effective in scanning beyond the firm's current area of operations but, within that area, line managers are more useful scanners for they have the networks required for effective surveillance. This phenomenon will become even clearer when the writer present the case study data in the following chapter.

This link between environmental unpredictability, the need for broad scanning for "political and ideological intelligence" and the usefulness of "policy experts" as opposed to "facts-and-figures experts" had been suggested by Willensky (1967) based on his sociological study of the organisational intelligence function. The same phenomenon was observed by Aguilar in his case studies. The association may have an important implication for organisation design. Perceived environmental unpredictability is influenced by the structure of the organisation : by the extent of its internal integration and differentiation (Lawrence and Lorsch, 1967). Therefore, at least to a limited extent, how unpredictable the managers of a firm feel the environment to be, can be manipulated through these design variables. This perception of

unpredictability, in turn, would affect the nature of scanning and, in the long term, the adaptive capability of the firm. Normatively, such an argument has been made before. For instance, it has been suggested by Thompson (1967) that an organisation needs to both protect its core and to expose it for effective learning and adaptation. Exposure to the broad environment is useful in sensitising the organisation (or a sub-unit) to the need for change; protecting and isolating it, is desirable in the process of effecting and institutionalising the change. Thus, according to that author (Thompson), the structure of the organisation or the sub-unit should vary depending on the particular phase of adaptation that it is going through. The findings in this thesis add credibility to this normative argument. An organisation needs to be overintegrated at the sensitising phase so that managers perceive the environment to be more unpredictable and broaden their scanning to the wider environment. At the change-embedding phase, it needs to be overdifferentiated so that it perceives the environment to be relatively more stable and can institutionalise the change while paying attention only to the more limited task environment.

A number of authors have pointed out the dangers of an overly analytical approach of firms that can curb innovation, experimentation and risk-taking. Peters and Waterman (1980) have spoken about the "bias for action" of the need to follow the ready-fire-aim sequence and to overcome the hubris of analysis. A second hypothesis that was confirmed in the final model is consistent with this argument. When managers perceive the firm to be highly analytical, their scanning becomes domain-constrained. That is the posture of the defender organisation and such scanning is incapable of digging bold new opportunities. In an era of environmental unpredictability and discontinuity, there may be a valid argument for deemphasising analysis and linear thinking so as to promote the organisation's sensitivity to the broader environment and to enhance its ability to innovate. A firm's opportunities and threats increasingly arise from outside its task environment particularly in the high technology industries where innovations in

one industry can revolutionise another with which, till that time, it had little in common. In such an era, a healthy dose of unconstrained scanning is essential for proactive or even reactive coping. Analysis is useful only when there is a causal model that connects events to their effects. In the face of possible discontinuity, there is often no such causal model to help managers interpret changes in the broad environment and intuition and gestalt rather than logic and analysis may be preferred learning tools under such circumstances. The first signs of an opportunity or of a threat arising from beyond the task domain is usually a gut-feel that cannot be justified with analytical precision. If such gut-feel are not felt to be acceptable within the firm, managers will gradually stop looking beyond the immediate task domain.

Managers with greater experience with diversity are less constrained in their scanning. The more entrepreneurial the personal orientation of the manager, the more unconstrained is his scanning. These are the two other hypotheses that were confirmed. Both have interesting implications for the training and staffing functions. Streufert and Driver (1965) had suggested that organisational placement of managers should match their cognitive complexities with the requirements of their jobs. Certain functions in firms may require managers who are sensitive to the broad environment; strategic planning or new venture development are possible examples. Even among the more traditional functions, marketing may need a greater awareness of the broader environment trends compared to accounting. An organisation can benefit by systematically placing more entrepreneurial managers and those with greater exposure to diversity in such functions. Similarly, internal training and development programmes may be tailored so as to expose managers in such functions to greater diversity by rotating them in different assignments in different locations. These suggestions are not new and firms' have been following them traditionally. It is comforting, however, that these implications, the model is not counter-intuitive.

All these are expected results and they confirm past theoretical suggestions and empirical observations. What may be more interesting to review are the two surprises in the model. First, as environmental heterogeneity increases, scanning, instead of being more diverse as hypothesised, becomes more restricted and domain-bound. Second, as the task is perceived to be less and less structured, scanning becomes less diverse and more focussed on the narrower task environment. The path diagram confirms that the effect of environmental heterogeneity is also mediated through the perception of task structure. In effect, therefore, the surprise is really one : why does the perception of the task being unstructured lead to more constrained rather than less constrained scanning?

Schoeder *et al* (1968) have demonstrated the existence of an inverted U-shape relationship between environmental complexity and integrative complexity of individual's cognitive maps. Lawrence and Lorsch (1967) have built on these findings to suggest that beyond a level of information complexity, innovation and learning are hampered due to limitations in human information processing capacity. Similarly, it can be argued that beyond a level of task complexity, "information avoidance" behaviour becomes predominant as a means to reduce cognitive overload. Beyond this point, search becomes simple-minded problematic search - " . . . in the neighborhood of problem symptoms and . . . in the neighborhood of current alternatives" (Cyert and March, 1963, p121). In this range, we can indeed expect to see decreasing scanning diversity with increasingly unstructured tasks. Further, all the respondents in this thesis occupy managerial positions and thereby face relatively unstructured and judgmental tasks. Therefore, it is not impossible that the data in thesis pertains to this range.

There are also several research done to suggest that stress in the decision situation reduces the dimensionality of decision behaviour. It does not affect the extent of risk-taking but leads to a more unidimensional focus on one action domain. Extending this argument, it is not implausible that when tasks become too complex, decision makers narrow rather than extend their scanning focus.

Reviewing the literature on human performance in information search tasks, Connolly and Serre (1982) have noted that ". . . human skills in balancing the most and benefits of information acquisition may be seriously deficient, even in a laboratory task in which the balance is made highly salient and extended opportunities of learning are provided. If these findings generalise to the real world information acquisition tasks noted earlier, they imply significant non-optimalties may be found in such tasks". (p3).

It has also been suggested that perceived cue validity affects information acquisition behaviour. Low validity cues may not yield enough reduction in decision error to justify acquisition of such information (Connolly and Gilani, 1982). Edwards (1965) has suggested this relationship normatively, based on the Bayesian model of decision behaviour. Snapper and Peterson (1971) have confirmed the suggestion in their laboratory experiments which show that subjects information behaviour depart substantially from optimum : subjects overacquire information when diagnosticity is low, underacquire at intermediate levels of diagnosticity, and acquire information optimally only for highly diagnostic information. Connolly and Serre (1982) have extended the finding to show that the pattern of overacquisition of information for low-consequence decisions and under-acquisition of information for high-consequence decision is robust to variations in overall cue validity. Further, they have also shown that such sub-optimal information acquisition behaviour persists with feedback and learning is often limited.

The pattern of these findings is not inconsistent with the following scenario : managers face a high degree of cognitive stress when they perceive their tasks to be highly unstructured. This leads to an unidimensional focus in their information acquisition behaviour. Given the ambiguity and equivocality in information that accompany unstructured tasks, information from the broader environment have even lesser cue validity than information from the more interpretable immediate task environment. Therefore the unidimensional focus is directed toward that domain. Hence the finding that the more unstructured the task, the more domain-constrained the manager's scanning behaviour.

Another explanation for the finding may lie in the notion of slack. Managers carrying out structured tasks may have more slack to invest in scanning the broader environment. When tasks are highly unstructured, little slack may be available for any activity other than getting the immediate task done. The slack in question may not be physical slack in the sense of time or other tangible resources but intellectual slack in the sense of cognitive capacity. The scanning needs for unstructured tasks may be biased toward the broader environment precisely because the task is structured and the immediate environment is predictable and unambiguous and therefore does not need to be constantly monitored.

It is not possible, given the nature and limitations of the data used in this thesis, to go beyond this stage of conjectures about the relationship between task structure and scanning behaviour. The writer cannot suggest which, out of the many possible explanations, is more plausible. But, as the writer had started out saying, the relationship may not be spurious. It is contrary to all normative suggestions but, as the writer has tried to show, there is enough evidence to suggest that human information acquisition behaviour does not follow normative guidelines. What the writer may have, is another example and another evidence of such non-optimal behaviour; one that is obtained from real life rather than from structured laboratory experiments.

Chapter Ten
Organising the institutional scanning
function

CHAPTER TEN

ORGANISING THE INSTITUTIONAL SCANNING FUNCTION

So far in this thesis, the scanning function has been presented entirely at the individual level, with the focus on how managers acquire external information and how their scanning behaviour are affected by their personal traits and by their perceptions about the environment and the organisation. In this section, the focus will be on the organisation, to explore the implications of such individual level scanning behaviour on corporate organising of the external intelligence function.

The primary data for this section are interviews with managers in two large Malaysian institutions (name of institutions are not mentioned specifically as explained in chapter three). However, for reasons that will be explained shortly, the way the scanning function was organised in both institutions was very similar. So, in the interest of avoiding needless repetition, the writer describes the scanning organisation and system in only one institution, in full detail. Materials from the other case is used more anecdotally, to explain a point or to highlight a difference.

As the writer was conducting the case studies in the two institutions, it gradually become manifest that the formal organisation for the scanning function were remarkably similar in both. The scanning units, in both, were lodged within the corporate planning function. In each firm, the scanning unit had two groups; one responsible for what was classified as strategic information and mostly referred to information relevant for the long term planning function, and the other for handling information pertinent for day-to-day operations. The unit was also labelled the same way : it was called the Research and Analysis Department. The formats for their daily and weekly reports were similar, often indistinguishable. Even the objectives of the departments as narrated by the managers in charge, were almost identical. This observation led the writer to an inquiry about the

reasons for such startling similarities and the finding that cause lay in one man : Mr Othman Zakaria (All names used in this chapter are fictitious since it was specifically agreed - as per explanation in chapter three - that identity of persons, institutions, *et cetera* will not be revealed or mentioned in anyway in this thesis).

Mr Othman is an ex-intelligence officer of the Malaysian armed forces who entered the business world in the early 1970's as an executive of the XYZ Berhad group of company. He had set up the scanning organisation in the XYZ marketing division which was later adopted by the whole company. In 1981 he resigned from XYZ Berhad after completing an MBA degree from an American university to head the newly formed KUMA Sdn Bhd, an American/Malaysian owned independent consulting firm, of which, at the time of this study, he was the CEO and a managing partner. The principal activity of KUMA Sdn Bhd (which is based in Kuala Lumpur) is to advise Malaysian institutions about setting up and improving their intelligence systems and a major part of the service is to train managers in client firms both on how to scan for information and also on how the scanning function should be organised within the firm. Mr Othman has a blue-print of the scanning organisation and over 15 of the major Malaysian firms (including XYZ (P) Berhad where it was developed) have adopted this system. Managers from these firms regularly attend formal courses that help them to maintain and upgrade the systems. They also attend informal get-togethers organised by KUMA Sdn Bhd where they exchange their experiences with the existing systems and their ideas for system improvement.

The result of this process is that the scanning organisations in many of the large Malaysian firms have come to become remarkably similar. Even minor modifications in formats or in task groupings, if found useful in one firm, are soon adopted by others. The only significant difference lies in how extensive the formal scanning system is in the different firms. It is widely believed that XYZ Berhad has the most extensive scanning system in Malaysia. The formal scanning department is larger in this firm compared to all

others and it has made the largest investment in specialised manpower for acquiring and interpreting external information. The system in ION Sdn Bhd, for instance, was almost exactly a small scale replica of the XYZ system. The scanning system in XYZ Engineering was an even smaller version of the same model. (The writer conducted a few interviews in this institution but did not carry out a case study precisely for this reason.) Therefore, in this chapter, the writer describes the scanning system of XYZ only and base most of the examples and inferences on what was seen here in this institution.

XYZ (P) BERHAD

XYZ (P) Berhad, is the primary international arm of the XYZ group of companies and was the first to be designated by the Malaysian Federal Government under the New Economy Policy (NEP) concept as a Model Business Institution (MBI) of the year (and has been, and will be striving for the position in years to come). In 1983, its sales totalled \$2.6 billion on which the company recorded a net profit of \$11 million. During that year, the company employed 4,700 people, had 52 branches around the world and conducting business in export and import very extensively.

THE XYZ GROUP

The XYZ group, of which XYZ (P) Berhad, is a part, is listed in the references mentioned in chapter three, page 41 (although the exact name is not reveal, for reasons already mentioned earlier) , and other publications (see also chapter one for the source reference). In 1982, the sales of the group was \$5.8 billion and its net income was \$27 million. Over the preceding decade, the group has registered a staggering growth rate of 45% per annum. In 1982, its total assets exceeded \$4.6 billion and it employed a large number of people in its world-wide operations..

Beginning with business activities in the rubber and tin industries XYZ grew rapidly to become Malaysia's largest companies in the 60's and 70's. During this period, it rapidly diversified its activities, entering service industries such as insurance, banking, retailing, shipping, timber and a number of traditional manufacturing industries including fertiliser and paper. In the early 1970s the group invested heavily in capital-intensive sectors such as petrochemicals, construction, off-shore resource development and shipbuilding. From the late 1970s the group reoriented its diversification strategy to enter more technology-intensive sectors. This strategy led the group into the electronic, semiconductor, telecommunications and precision instrument industries fostering in practice and principle the *Look East Policy* concept of the Mahathir government.

The XYZ group was the creation of the entrepreneurial genius of Tun Tan Sri Kwok, fabled to be one of the richest individuals in the world. Tun Kwok now 74, continues to be the strong bulwark of the group as Chairman and hold majority share of most group companies, either directly or indirectly. The Presidents of the companies report to Tun Kwok through a secretariat known as "The Office of the Executive Staff" (OES) which functions as an advisory body to the Chairman. However, each company within the group enjoys considerable autonomy to take decision about its own operations. By Malaysian (and even ASEAN) standard at least, the extent of strategic autonomy enjoyed by the companies is exceptional and is a direct result of Tun Kwok's firm faith in a decentralisation form of management. This faith is manifest from the following statement made by him in one of his very rare press interviews :

"I have never made any decisions for the past 15 years. Even when a President of a member company comes to me to ask my approval, I never answer. I believe that XYZ succeeded because I delegated authority very early. For years, I have never attended the weekly meeting of the group presidents only once or twice a year" (From a leading Malaysia/Singapore newspaper)

XYZ (P) Berhad

Exporting out of Malaysia/Singapore is the principal activity of the (P) Berhad and accounts for 76% of the company total sales. Imports into Malaysia/Singapore are the next important function contributing, in 1986, approximately 13% of the firm's total turnover. Other companies in the group absorb 30% of the import volume and the remaining 70% is imported for other customers, including the Malaysian and Singapore Government. Domestic sales and some neighbouring ASEAN sales are both relatively minor operations, contributing 4 percent and 3 percent respectively of sales and even less of the company's profits. To provide a measure of comparison, these shares of different activities of the XYZ are compared in Table 10:1 with similar shares for the Japanese Sogo Soshu as a group. (Source: XYZ data bank)

Table 10:1 - XYZ (P) Berhad and the Japanese Sogo Soshu. A comparison of sales by type of activity.

	XYZ (P) Berhad	Japanese Sogo Soshu
Exports	74%	21%
Imports	19%	24%
Domestic sales	4%	40%
Third country sales	3%	15%

Between 1979 and 1987, sales of the company has grown by over 1000% increasing from \$243m to \$2.6b. During this period, the number of overseas branches have increased from 16 to 52 and profit have expanded from \$650 thousand to \$11 million (Table 10:2).

Table 10:2 - XYZ (P) Berhad

General information sales (Unit : US\$1,000)				
Year	Domestic	Exports	Total	Net Profit
79	17,708	225,903	243,610	653
80	34,147	363,587	397,734	4,671
81	160,951	492,285	481,456	2,347
82	97,788	493,394	591,182	1,738
83	165,041	772,290	937,331	1,105
84	164,171	1,237,106	1,401,273	3,592
85	176,113	1,657,158	1,833,271	5,687
86	403,641	1,860,356	2,263,997	3,928
87	411,139	2,225,275	2,636,414	11,060

Number of employees				
Year	Domestic	Abroad	Total	No. of overseas branch
79	2,700	34	2,734	16
80	2,657	60	2,719	20
81	3,465	96	3,561	34
82	3,407	114	3,521	37
83	3,186	103	3,289	33
84	3,593	114	3,706	35
85	4,061	149	4,210	39
86	4,340	172	4,512	48
87	5,554	175	4,729	52

The company is divided into twenty-four divisions which are devoted to exports, to imports, to domestic sales and to production. Each division is divided into departments by product categories with a total of seventy-one departments within the twenty-four divisions. These departments are further divided into one hundred and seventy seven sections for dealing with separate products or functions within the department. Each division is headed by a Managing Director and operates as a profit centre with responsibility for both formulating and implementing its own strategies.

The overseas branches report directly to the President of the company. These branches vary in size from a minimum of two employees to a maximum of seventy employees. A few of the larger branches such as those in the U.S. and a few Western European countries are organised as subsidiaries and enjoy considerably more autonomy compared to the smaller branches. Subsidiaries can set their own prices and can conduct business independently as long as individual transactions do not exceed \$10 million. The smaller branches, in contrast, have to obtain head office approval for almost all business transactions.

NEED FOR A FORMAL SYSTEM TO COORDINATE SCANNING

Past authors on the issue of corporate scanning have suggested that the large organisations need to formalise their scanning mechanisms and not leave it to the best judgment of individual managers. According to Aguilar (1967 and 1981), the absence of formal coordination, the "George will do it" attitude may prevail with regard to scanning and it may be left as no one's direct responsibility. This would be a consequence of the Gresham's law of planning described by March and Simon (1958) : "We predict that when an individual is faced with both highly programmed and highly unprogrammed tasks, the former tend to take precedence over the latter even in the absence of strong over-all time pressures".

Kalff (1980) has also argued that "there are a number of reasons why environmental scanning should not be left to individual decision maker, but should be insitutionalised". *Formalising*, according to Kalff, is required to improve coordination, to develop a common understanding of societal developments, to systematise evaluation and for overall enhancement of organisational learning that can occur to the firm out of the scanning process. Similar arguments have also been made by Collings (1968).

In the writer's study of the scanning function in XYZ (P) Berhad, two issues were highlighted to support these normative arguments in favour of institutionalising scanning. First, the data shows the enormous diversity in individual level scanning behaviour that exists with the company. As shown in chapter three, the diversity that exists within the company is no less than the diversity that exists across companies. This diversity provides empirical evidence to support the need for formal and institutional **coordination** suggested by Collings (1968). Second, as this survey of Malaysian managers reveal, over 60 percent of information collected by individual managers is perceived to be useful to other managers in the company. This supports the argument of Kalff (1980) that a special scanning unit is required to ensure effective **communication** of external information within the company.

Diversity of individual-level scanning behavior within XYZ

Total time spent on scanning by managers of the company varied from 2 hours to 28 hours per week with a mean of 11 hours and a standard deviation of 6 hours. The distribution of scanning time on different factors was similarly diverse (Table 10:3) : the maximum percentage for all factors exceeding the maximum percentage for all others (except for the residual 'others' category).

Table 10:3 -Intra-company diversity in time spent on different information factor.

Percentage time spent on different factors	Mean	Standard deviation	Min.	Max.
Competitive	22	8.8	10	40
Market	34	11.4	15	50
Technology	10	5.3	5	20
Regulatory	10	4.1	5	20
Resources	10	5.4	2	25
Broad issues	9	6.3	0	25
Others	5	3.3	0	10

There was similar diversity with regard to use of sources. The relative importance of internal sources varied from ten to eighty percent; that of external sources varied from twenty to ninety percent. Similarly, relative usage of personal and impersonal sources varied widely among managers within the firm (Table 10:4).

Table 10:4 - Intra-company diversity in use of sources.

Percentage usage of sources	Mean	Standard Deviation	Min.	Max.
Internal sources	50	21.2	10	80
External sources	50	21.2	20	90
Personal sources	58	20.0	20	90
Impersonal sources	42	20.0	10	80

The extent of intra-company diversity was no less in usage of scanning modes (Table 10:5).

Table 10:5 - Intra-company diversity in usage of scanning modes

Usage of scanning modes	Mean	Standard deviation	Min.	Max.
Viewing	24	15.0	0	60
Monitoring	30	12.3	10	60
Investigating	27	11.6	10	50
Research	17	12.9	0	60

It has been argued in this thesis that individual level scanning behaviour is influenced by the individual's personal attributes as well as his perceptions about the environment and

the organisation. If the scanning behaviour of individuals within the company shows such enormous diversity, it would be expected that they would display similar diversity with regard to those influencing variables.

It has been pointed out earlier (chapter five) that, compared to NWCFs executives, WCFs managers find the environment to be both more homogeneous and more predictable. Looking within an individual WCF, the same pattern is generally observed - more managers feel the environment to be homogeneous rather than heterogeneous and predictable rather than unpredictable (recall that the categories were created with a mean split of the relevant scales). However, the company does not serve as a homogenising factor with regard to the managers' perceptions about the environment (in Figure 10:1 is not significant).

Figure 10:1 - Perception about the environment

		Environmental homogeneity	
		Homogeneous	Heterogeneous
Environmental Predictability	Predictable	9	5
	Unpredictable	8	4

(d. f. = 0.016 [p > 0.8])

Similar diversity exist with regard to managerial perceptions about the strategic orientation of the company. Overall, the company is seen as *analytical* and *risk averse* (an opinion about XYZ that is widely shared in Malaysian/Singaporean business circle), but intra-company variance in perceptions is quite large (Figure 10:2) and the test of significance does not reject the hypothesis that the managers are randomly distributed among the four cells in the table.

Figure 10:2 - Perception about strategic orientation of company : managers in XYZ (P) Berhad

		Perception about company's attitude toward risk	
		Risk-averse	Risk-seeking
Company's analytical orientation	Not highly analytical	7	2
	Highly analytical	8	9

(1 d.f. = 2,28 [p>0.13])

Further, Table 10:6, and 10:7 show that neither the hierarchical level of the manager nor his departmental affiliation has any systematic effect on managerial scanning behavior (ANOVA F's are significant for 3 levels and 4 departments out of the 22 measures).

This extensive and non-systematic variation not only in the way managers of the same company scan the environment but also in the way they perceive the company's strategic orientation and the characteristics of the external environment provide empirical validation to Collings' arguments in favour of institutionally formalising the scanning function in large firms. Such formalisation is required to coordinate the scanning activities to avoid "holes" in scanning that are bound to exist in its absence.

Table 10:6- Effect of Management level on scanning behaviour

<u>Scanning Time/Factors</u>	Management level			P Value of ANOVA 'F'
	Junior Middle	Senior	Top	
Total scanning time (hours/week)	11	11	11	11
% time competitive factors	20	25	21	0.47
% time market factors	31	37	39	0.28
% time technology factors	10	10	11	0.96
% time regulatory factors	11	9	8	0.34
% time resource factors	12	9	7	0.18
% time broad issues	11	6	11	0.18
% time others	6	4	6	0.56
<u>Sources</u>				
% internal	58	32	65	0.01
% external	42	63	35	0.01
% personal	39	59	54	0.91
% interpersonal	42	41	46	0.91
<u>Usage of external sources</u>				
% customers	23	24	24	0.97
% suppliers	16	13	26	0.10
% bankers	6	6	3	0.77
% advertising agents	3	2	8	0.39
% agents & distributors	9	10	11	0.91
% consultants	4	5	3	0.83
% general publications	14	13	14	0.98
% trade publications	16	15	9	0.66

Table 10:7 - Effect of departmental association on scanning behaviour

<u>Scanning time/factors</u>	Departmental affiliation			P value of ANOVA
	Marketing	Planning	General Management	
Total scanning time (hr/wk)	12	12	9	0.71
% time competitive factors	24	22	24	0.59
% time market factors	35	30	33	0.56
% time technology factors	10	8	12	0.28
% time regulatory factors	10	10	8	0.76
% time resource factors	9	13	9	0.68
% time broad issues	9	-	10	0.91
% time other factors	4	6	6	0.63
<u>Sources</u>				
% internal	43	71	51	0.01
% external	57	29	49	0.01
% personal	66	52	56	0.13
% impersonal	34	48	44	0.13
<u>Usage of external sources</u>				
% customers	29	25	19	0.06
% suppliers	21	14	17	0.11
% bankers	3	4	6	0.56
% advertising agents	3	2	8	0.41
% agents & distributors	10	12	11	0.52
% consultants	5	3	5	0.76
% general publications	8	13	16	0.05
% trade publications	16	18	9	0.25
% trade shows	2	5	6	0.36
% others	4	4	1	0.22

Organising the corporate scanning function is required not only for this coordination but also for internal communication of information acquired by individual managers. In the survey, managers were asked to categorise external information collected by them in four categories: information useful to self only, information useful to self and to others in the organisation, information useful to others but not to self, and information not useful to anyone in the company. The responses are summarised in Table 10:8. As can be seen, approximately 60 percent of external information acquired by managers is seen as potentially useful to others in the organisation. For such use to materialism, the information needs to be communicated and, for both efficiency and effectiveness, the communication system needs to be organised.

Table 10:8- Need for internal communication of external information.

	Total sample (n = 111)		Only XYZ (n = 27)	
	Mean	Std. deviation	Mean	Std. deviation
% useful to self only	27	18	29	21
% useful to self and others	41	20	41	23
% useful to others and not self	20	14	18	11
% useful to none	12	11	12	14

Coordination and communication are the two justifications for a formal scanning organisation that are suggested in the questionnaire survey data. The interviews within the firms suggest two more justifications. Of the 36 executives interviewed in the three firms, 23 mentioned the need for collecting different pieces of information as the most important reason for creating a special "Research and Information" department. Among the XYZ (P) Berhad executives, 12 out of 14 did so. The collating process involves both validation and interpretation and these according to the respondents, require a

specialised staff to devote their full-time attention to.

With this brief review of why a formal scanning organisation may be necessary, a description of the scanning organisation at the XYZ (P) Berhad is appropriate. Later, the writer shall return to this question of need for formalisation when the review as to the extent to which the scanning unit of the company is perceived by the managers to fullfill the needs, is done.

THE CORPORATE SCANNING UNIT IN XYZ (P) BERHAD

Interviews after interviews, managers of XYZ (P) Berhad emphasise that information was the firm's most important asset and that its success depended largely on its ability to collect, interpret and react to external information with speed and insight.

A comment of Datuk Samshuddin, Executive Vice President of the company and a member of the corporate board, is a typical example : "Few companies face as intense a level of competition as does a global functioning operation. Many of our competitors are much larger and have been operating for a much longer periods. They have very extensive network all over the world. And, in the world of business, things move very fast. Too fast. We have to have the latest information and it must be accurate. That, I consider, is more important than anything else".

Datuk Chin, Executive Director of the Engineering and Construction Division highlighted another important requirement of scanning. "Information that is in the public domain is mostly of no use in the current business. It helps for future planning but for actually transacting business, we need information before they are made public. We need to know when a government in the Middle East starts thinking about importing a large volume of engineering/construction equipments, so that we can research the

actual need, evaluate possible competition and offer the right equipment at the right price when the tender is actually issued. If we start working only after the tender is made public, there may be too little time for effective ground work".

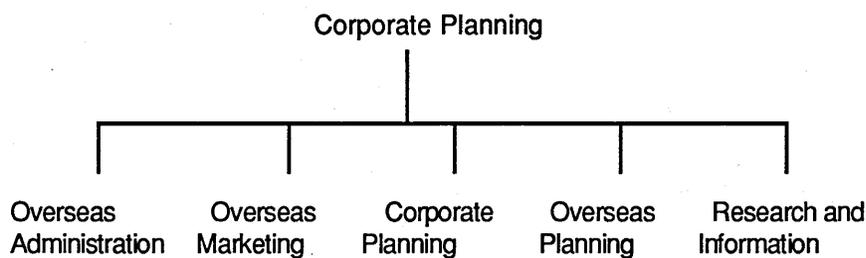
While these comments were typical of the managers' concern about external information for current operations, the need of external intelligence for long term planning was also highlighted by many. Datuk Yap, Managing Director of the Financing and General Administration Division emphasised the complex information processing requirement for managing the finance function : "As internationally operating organisation, we operate on narrow margins. Financing cost is a very important part of our total costs and it must be kept down if we have to compete internationally. We raise money all over the world - or at least we can, if we wish to. We must carefully monitor the fiscal and monetary policies of the governments where the major capital markets are located, must read the analysis and expectations of experts and then decide our long term financing plans. We have help - the analysis reports from banks and consulting organisations - but ultimately we decide based on our own assessments. Six months ago, the three-year interest swap was 11 percent. We should have made our deal but we did not. That was a mistake. Now the rate is 12 and a half percent. To me, that is an intelligence failure."

These comments are not empty words. The institution has put a lot of money where its mouth is. It has invested significant resources on scanning - both in terms of having specialised manpower devoted exclusively to the scanning task, and also by insisting on the line managers to become more aware of their scanning responsibilities and by instituting procedures so that they collect and communicate external intelligence on a regular basis.

The central scanning group for the company is lodged in the corporate headquarters within the Planning Department. Planning is considered to be high priority function

within the company and the division has a strength of over 100 full-time employees and is directly supervised by Datuk Samshuddin, the company EVP. The department is composed of five major functional groups (Figure 10:3).

Figure 10:3 - Structure of the corporate planning division at XYZ (P) Berhad

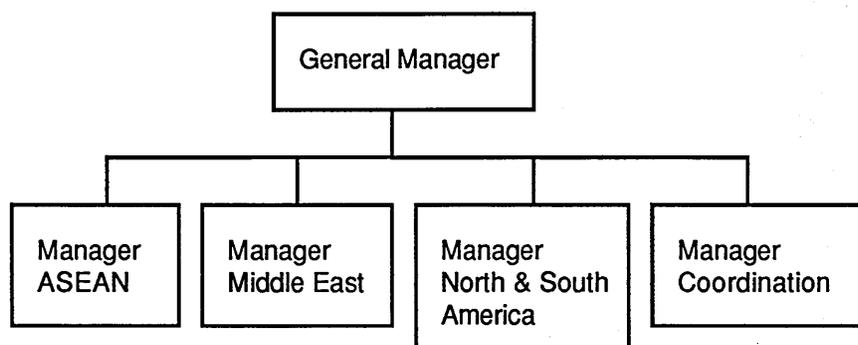


The Corporate Planning department is principally responsible for formulating long term plans and for providing special support to the top management in formulating broad strategies. The Overseas Administration department deals with human resource issues : assessing manpower requirements for the overseas organisation, arranging recruitment, placement and transfers. Overseas Marketing is a special unit responsible for marketing in countries with which Malaysia does not have diplomatic relations (mostly the communist countries and countries that are not friendly with the Association of Islamic Countries [AOIC]). The remaining two sections, the Overseas Planning (OP) and the Research and Information (RI) departments are devoted full-time to the external intelligence function. The RI section is specialised in dealing with publicly available information - mostly in the printed form - provided by general and trading publications and by special private and government organisations. It focus on the long term - into what Montgomery and Weinberg (1978) described as the Area of Interest - and monitor overall economic, social, cultural and political developments, broad trends of different products and markets, published studies about suppliers, buyers and competitors. The Overseas Planning section, in contrast, is involved only with current business. It

receives market reports, competitors' intelligence, and other such information provided by the overseas organisation. It receives raw data, unprocessed, and it is their job to analyse and interpret the data and to explicate their implications at a tactical or operational level.

The OP section is headed by a General Manager and is structured into four groups (Figure 10:4). The groups are organised geographically, with three groups coordinating the scanning function for each of three regions; ASEAN countries, Middle East, and the Americas. The manager in-charge of each group is responsible for reviewing, analysing, and communicating intelligence reports received from overseas offices within the region that the group is responsible for. The fourth group coordinates the work of the three regional groups.

Figure 10:4 - Structure of the Overseas Planning Section
XYZ (P) Berhad



It is responsible for synthesising the reports from the other three groups and for internal circulation of consolidated reports to the senior managers, product division and overseas offices, as required. Manager of each of the groups is supported by three staff members, bringing up the total strength of the section to seventeen members, (five managers including the General Manager and twelve staffs).

The General Manager (GM) of this group, Datuk Baharuddin, had considerable line experience both in a product division in the headquarter and in a major overseas branch (United States). He had been placed as a manager in the OP section after eight years in the company and was promoted as the GM of the section after spending two years in the section during which time he had been rotated among all the different groups. He had been a GM for a little over a year. "Line experience is critical for working in this section," Datuk Baharuddin emphasised during the interview, "otherwise you cannot either understand the problems of the overseas offices in collecting information nor can you properly interpret the implications of information you received. Every manager in this section has at least five years of line experience and that is their most important asset."

Every overseas office of the company employing more than five people must send a daily report to the OP section. Within the company, this report is called the DI - an acronym for Daily Information. The report includes all relevant external information collected by the branch during the day. The DIs are telexed at the day-end by each overseas office - often it is the last thing the Branch Manager does before leaving the office for the day. Offices with three to five employees must send the DI four times a week and a single or two employees office is required to submit the DIs at least thrice a week. These are important rules, any violation of which must have very good reasons. The reports came in from Iran, over the telex line of the company's banker, even during the worst days of the Iranian revolution. Not a single DI was missed by the Beirut office when the city was under siege - being bombed by three different armies. On the average forty such reports are received and processed every day by the OP section.

To submit this report, the managers of the branches, in turn, require all field offices to turn in a daily report and there exists an unwritten law in the institution/company that officers must include at least one item of information each day in their report to the

Branch Manager. Through the DI system, a great deal of pressure is exerted on all field personnel of the company to actively seek information through all their external contacts.

The OP section has both a communication and an interpretation function. On a daily basis, it summarises the important items in the different Daily Reports, translate the summary into *Bahasa Malaysia* (BM) [the Malaysian national language] and circulates it to all important managers in the company. This is the Outgoing DI, the document a majority of the company's managers receive midday, everyday, containing field information reports of the preceding day. Every manager is expected to peruse the report and to circulate it within the department on the same day. The report usually contains just data or information, not an analysis or synthesis.

The analysis is communicated in a separate and highly confidential report - the Daily Dash Report. These are numbered and sent in sealed enveloped to Senior Managers only, who must read and destroy them immediately. "If Iraq is considering such large quantities of army uniform materials suddenly, fresh army recruitments must be anticipated. This may mean that an escalation of the war is imminent. That, in turn, implies that Iraq may face a further strain on its resources, particularly with regard to availability of foreign exchange for payment of non-defense materials. They may therefore be likely to defer payment on such materials. We are heavily involved supplying them with building materials, chemical and fertilisers. Caution must be exercised on future supplies and the payment situation must be monitored very closely." That is an example of the contents of the Dash Report (the name comes from a campaign that has been promoted within the company - The Dash to Prosperity - for motivating employees to work for the good of the company and the country).

While the DIs from overseas branches are the main information sources for the OP section, they are not the only ones. The other major source of information for the

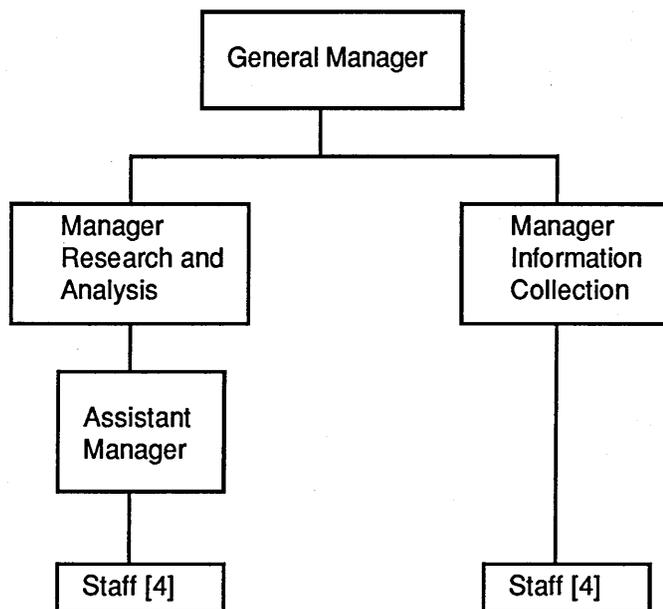
section are the four reports of headquarter managers visiting foreign markets. Each manager must submit a detailed tour report, conveying not only what he did during the tour but also his general impressions about the market(s), his conjectures about business possibilities that may be related or not related to this function and also significant piece of information collected by him during the tour. A copy of this report circulates through the manager's chain of command but another copy goes directly to the OP Section who analyse the information it contains and incorporate them in the outgoing DIs and Dash Reports. In 1986, XYZ headquarters managers made over 500 business trips abroad, generating over 4,000 pages of tour reports. These were in many cases, the richest source of information for the OP section.

The Research and Information (RI) section was really born when, in March 1981, the Mahathir government conferred XYZ Berhad the status of Model Business Institution (MBI) of the year, thereby entitling the firm to special benefits with regard to tax relaxation, domestic credits, foreign exchange allocations, facilities of overseas spending on offices and travel, *et cetera*. From 1975, when the company started operating as an international concern, it had a small section with two to five staff members for collecting relevant information from different publications. But, being acknowledged as one of the MBIs resulted in a thorough review of the company's position and one of the outcomes of this review was a feeling that to survive in the turbulent and highly competitive international business, the company needed a far stronger information base. This perception led to a significant expansion of the RI section which now consists of four managers and seven staff members not including another four persons exclusively engaged in maintaining the corporate library, or rather the "data room" as company executives prefer to call it.

Mr Phang, General Manager of the section, was a political journalist by training and experience. He joined XYZ four years earlier, having been a political and economic columnist for about nine years in a number of Malaysian newspapers. In his career with

XYZ, he had spent the entire time in the planning department and had no line experience. His predecessor as head of the section, Mr Kumar, was also a journalist and had been moved out on promotion as the Branch Manager of Hong Kong before Mr Phang took over charge of the section. Similarly, the two managers incharge of information collection and analysis were also career planners - having spent their entire professional life (seven years in one case, five years in the other) in the planning department of the company.

Figure 10:5 - Structure of the Research and Information section : XYZ (P) Berhad



Mr Phang identified the following as the key functions of the RI section:

1. To monitor the overall economic situation in Malaysia and in all major world markets, particularly the United States, EEC countries, and countries in the Middle East. The primary focus in the economic analysis of foreign market was on factors that influence exports to those markets, viz., their foreign exchange position, trade balance in general and with Malaysia in particular, domestic employment and production, government spending, private spending, *et cetera*.

2. To monitor the Malaysian export situation, including competitive analysis of other Malaysian and Singapore MBIs, new products available for exports, Government policies with regard to exports, and long term national export plans and projections.
3. Monitoring other MBIs in the world, seen as global competitors, including, primarily, the Japanese MBIs and also the emerging trading companies in the United States and Europe and established trading companies in other South East Asian countries such as Taiwan, Hong Kong and Korea.
4. Country risk analysis for all countries where XYZ had or could potentially have any business involvement.
5. Information related to political and military development in important markets, particularly in the Middle East, Latin America and Africa.
6. Preparation of research reports on special topics, as and when required by the top management.
7. Wide diffusion of the information collected and analysed by the section to other managers in the organisation.

The principal instrument of communication from the section to other managers in the company are the weekly Information Summary Report and two fortnightly publications - one called "Bridge" to circulate significant economic and political information and the other called "Content Report" which is a bibliography of all important articles, pamphlets, books, *et cetera*, that are noticed during the two weeks and that are considered as potentially relevant to the business of the company. The report indicates the title of the piece, its author and source, and a two to three line summary of the information or analysis contained in the piece. The weekly report and both the fortnightly reports are sent to each and every manager of the company and the managers, in turn, are expected to encourage their staff to read them.

Additionally, the RI section publishes a monthly "Economic Indices" that include key economic statistics for all important countries (ninety countries were covered in the latest report). The report is published as a pocket size booklet that managers can always have in their possession for ready reference. Information contained includes, for each country, latest figures of imports and exports, GNP, interest rates, level of unemployment and inflation and the exchange rate for a number of different major currencies.

Finally, the section publishes, twice a year, a major compilation of detailed information on fifty key markets in the world. Titled "Management Environment", the report contains brief descriptions of the countries, their principal export and import commodities including principal sources and destinations, external debt, and its implication on government policy, trade balance with detail breakdown for most important products, GNP with category-wise breakup, information about key products, including demand growth, competitive environment, government policy about trade and protection and an overall assessment of the business climate in that country as applicable to XYZ . This publication is based on DRI reports, OECD reports, Wharton Country reports, market reports from KUMA Sdn Bhd (refer to page 181) and Frost and Sullivan and a host of journal including Time, Euromoney, Institutional Investor, and special reports from private and public research institutions in Japan, the United States and Malaysia. During the rounds of interviews with managers in different branches of the company, it was observed that all of them invariably keep a copy of the latest "Management Environment" on their desks and most also carried a copy of the "Economic Indices" in their wallets.

It is also the responsibility of the RI section to maintain the "Data Room" which contains all important external publications, reports, books, *et cetera*, and also copies of all important internal reports and publications. The library also maintains copies of all tour reports, minutes of all important meetings, and also all information relevant to the

company's history.

A clearer view of the section's activities can be obtained from a discussion of its activities during the week in which the writer observed the units' work. Two major tasks dominated the attention of Mr Phang. The first was to prepare a detailed report about the current exports of the firm's main competitors - the other Malaysian MBIs. The president of the company had ordered the special review which he planned to discuss with all senior managers in a meeting prior to the annual strategy meeting scheduled to be held in two months. The second task was directly related to the strategy meeting : Mr Phang had to prepare economic forecasts for 1990 for all eighty countries in which XYZ does business. This forecast was different from the Environment report. It was to be briefer and was required to focus specifically on economic indicators related to the company's business. It was also a sensitive task, since the country-wise, product-wise annual sales targets were often influenced by what he reported about the overall economic trend and his report was, therefore, scrutinised very carefully and was frequently challenged - either by country and product managers resisting quota increases or by top managers suggesting the increases.

USE OF SCANNING : SOME EXAMPLES

In the preceding section, the writer has described the formal scanning system in XYZ (P) Berhad. As is manifested from that description, the company invests considerable resources on the scanning function. What benefits does the company receive from this investment of manpower, management time, and money?

During the interviews, all respondents were asked to describe instances when they had used external information made available by the scanning unit for taking decisions or actions relevant to their own work. The result was that the writer gathered a large number of "war" stories some of which were the same. In this section, a few examples

of such use of scanning is provided. First, the writer describes how the company evolved a major new strategic thrust based almost entirely on a headquarter-directed large-scale environmental analysis effort. Next, a few examples, is provided, of how external information was used at a more tactical or operational level.

"Vision '87" : A new strategic thrust in XYZ

The later half of the 70s was a good period for all Malaysian MBIs in general, and for XYZ Berhad in particular. Malaysian wage rate were low and its products enjoyed a price advantage that made it easy to sell them internationally. Also, most of the major markets for Malaysian exports were enjoying relative economic prosperity. The Middle East was enjoying a boom. Even the U.S. and Europe, the initial effects of the oil shock was over, though some sectors of the economy were yet to come out of the recession, the sectors relevant for XYZ's product portfolio were on an upswing.

In early 1980, when the company was still in the midst of this benign environment, the RI section put up a report to the top management that was initially considered by some to be too alarmist but later proved to be highly accurate. Oil prices had started declining and the political climate in the Middle East had sharply deteriorated. Even in the West, the first signs of a new stagnation were visible and protectionist forces were gaining ground. These traditional markets of the company, the report suggested, might not remain as attractive in the 80's as they were the second half of the 70s.

This report was the starting point for a strategic redirection within the company. On reading the report, the president of the company ordered a thorough in-house analysis of all significant markets as a basis for a fresh evaluation of the company's long term plans. The planning department, and specifically, the scanning unit directed a massive effort to collect information and expert opinions on all those markets - a total of over a hundred countries - and finally produced a document that evaluated the company's

prospects in each of those countries in the next ten years. The final result of this analysis was a new strategy and a long term (five year) plan that was labelled "Vision '87".

In effect, the plan called for a major diversification effort for both markets and products. All national markets were classified as advanced, strategic or developing as shown in Figure 10:6.

Figure 10:6 - Market classification : "Vision '87"

Advanced : Japan, USA, EEC

Strategic : Saudi Arabia, Nigeria, India, Indonesia,

Developing : Sudan, Yemen, Sri Lanka, Turkey

The classification was very different from the company's traditional approaches to these markets. In the advanced markets, the company adopted a focus strategy, concentrating, in each of them, on a limited number of products that were felt to have the best profit potentials. Usually these were high value-added products where the company felt that it had a distinct competitive advantages over rival companies. The "strategic" market countries were so termed because the company expected more than fifty percent of its volume and profit growth from these markets. Substantial additional funds were to be made available for developing these markets by expanding the branches, establishing a network of contacts within both the governments and the industry. As was the case with the advanced markets, specific products were designated for emphasis in each strategic country.

Classifying a particular country into one or the other of the three groups was the most difficult part of the exercise. The company neither based its decisions on any particular economic criteria nor did it blindly follow any on of the many country analysis reports that it used for the analysis. Instead, the facts were made available to a large group of

senior managers and the classification emerged out of a slow process of consensus building.

Similarly, it was felt that in many traditional products such as tyres and textiles, the company (and the country) had lost its competitive advantage because of increasing wage rates in Malaysia and because of growing competition from other developing countries. These products were de-emphasised in the new strategy and were treated as cash sources for building up new products in areas such as electronics, machinery, *et cetera*. The overall objective of Vision '87 was to completely change the product-market portfolio of the company within five years.

In 1982, as the new strategy became ready for implementation, the company hit the rock that the 1980 RI report had cautioned about. The once flourishing Middle East market lay in a shambles, with Iran and Iraq, two of the largest markets, crippled by an unending war, it has very recently ended. Both the United States and the EEC were in the middle of deep recessions. The company's profits plunged from \$5.6 million to \$3.9 million. In the absence of the early warning, the experience would have been devastating. But, with the advance preparation, this performance decline only provide additional impetus to the new strategic thrust and the storm was weathered relatively easy.

Not facing the music in musical instruments.

In early 1981, the Manila office of XYZ included a small report from a local newspaper as an item in its DI. Filipino string instrument manufacturers, the report claimed, were facing extinction because of low-cost imports. Guitars, the wonderful symbol of the Filipino spirit acquired from its Spaniard mentors, would no longer be made in the country unless imports were curbed.

The Manila office did not, at that point, think much of that report. Musical instrument was a small volume product category. Besides, there was no immediate threat of import restrictions. The interest group was not considered to be strong enough to go through the lobbying process necessary to get a restriction in place.

The headquarter managers of the company, however, thought differently. Top managers, seeing the report in the outgoing DI of the scanning unit, decided that trade-restrictions were highly probable given the emotional appeal of the product. They also compared the international cost with those of the local manufacturers and concluded that prices were bound to increase substantially after the restrictions were in place. Based on this analysis, the company took a number of steps. First, it "sold" a very large volume of guitars to its Philippines subsidiary, building up substantial inventory within the country. Second, it renegotiated its contract with the supplier and ensured that the minimum offtake terms were dropped. The actual import restriction came about 8 months later generating the expected profits on the very substantial Philippine inventory. A year later, the humble Malaysian manufacturer, who had earlier expanded his capacity to meet the Philippine demand, went bankrupt.

Heard in the stock exchange

An office equipment salesman in the domestic sales division of XYZ (P) Berhad in Kuala Lumpur, while visiting prospects in the financial district, overheard a conversation that a particular large Indonesian construction company was trying for private placement of a rather large debt issue. Given the pressure to include as many items as possible in his Daily Market Information Report, he reported this information to the branch manager who, in turn, included it in his DI to the corporate scanning unit. What was not known to the domestic sales division is that XYZ supplied large quantities of building materials to this company for its international construction projects and that most of such supplies involved fairly substantial credit terms.

The scanning department, on receipt of the information, referred it to the finance department for verification and comments. Within two days, the finance manager confirmed the news and also indicated that the debt issue had become important because some of the company's project schedules had slipped and the company expected a severe cash shortage within six months. He also reported that the company was having problems in placing the debt as the market was concerned about the long term viability of the company. It had grown very rapidly and was very highly leveraged even by construction company standards. There was a concern in the market that the company had overextended itself and might not have the managerial resources required to manage all the projects it had undertaken. Besides, in its efforts to grow at a rapid pace, the company had also accepted contracts at very low margins and many of the projects could turn out to be unprofitable.

This information was then circulated by the scanning department immediately in its confidential Dash Report. Within three days of the accidental "overhearing" by a field salesman, the information along with the detailed interpretation was made available to every divisional head within the company. Among the actions taken by different divisions were the following:

1. The building material division gradually restricted supplies to the company while strengthening efforts to reduce its outstanding dues. This was done carefully so as to avoid a situation where the company might become aware of the strategy and stop all payments. In three months, when the company finally declared bankruptcy, XYZ's exposure had been reduced to about 20 percent of its usual level.
2. The XYZ Construction Company, prepared a detailed evaluation of all the projects under execution by the company to explore if some of them might be interesting to take up, should the company fail to complete them.
3. At the level of the group headquarters, an evaluation was carried out to investigate if XYZ might be interested in buying the company, should it

become available for sale.

These are merely three of many such examples that were described to the writer about how external information was used by the company to its own advantage. The writer recognised that many of the stories may be biased because of *ex-post facto* reconstruction. The actual processes may have been more serendipitous than their reconstructions may suggest. Yet these stories strongly indicate that organisations are not as constrained in their proactive use of external information as is suggested in the recent theories of environmental determinism. A few pieces of anecdotal evidence may not clinch the debate between environmental determinism and strategic choice. Yet, in all the three companies the writer found evidence that none of the internal or external constraints suggested by the population ecologists (Hannan and Freeman, 1982, p. 931-932) are as severe as the authors assume them to be. Relative to their environments, none of the companies are large enough to be able to modify the environments. Instead, they demonstrate what can only be called true adaptive behaviour : contrary to the arguments of Aldrich (1979), they enter and exit markets and even though their structures may be similar, their interpretations and actions differ based on perceptions which not only may be idiosyncratic to the firm but even idiosyncratic to the individual manager (see Child, 1972). The theoretical discussion on this issue, will be reserved for the concluding chapter.

PERCEIVED USEFULNESS OF THE CORPORATE SCANNING UNIT

The examples in the previous section show that organisations find external information useful for achieving their purpose and at least on certain associations, but could use such information for actively avoiding threats and exploiting opportunities. However, these examples do not provide a measure of how useful, in general, managers of the company find the corporate scanning unit to be. To address this question, it is best to revert to the questionnaire survey data.

Eighty-five out of one hundred and eleven respondents to the questionnaire were employed in firms that had a corporate scanning unit in one form or the other. In fact, for reasons that has already been explained in this chapter, most of these units were structured similar to that of XYZ and worked along the same lines though many of them were considerably less extensive than XYZ's both in their scope of operations and in staff strength.

All the respondents were asked if they found the corporate scanning unit useful for their own work. Table 10:9^{→ separate} summarises the responses, both for the total sample eighty five respondents and also for the subsample of twenty four XYZ executives who responded to this question.

Table 10:9 - Perceived usefulness of scanning unit

	Total sample of questionnaire respondents (n = 8)	XYZ (P) Berhad executives (n = 24)
Corporate scanning unit useful?		
Yes	45	8
No	37	16

In the overall sample, a majority of managers felt that the corporate scanning unit was not particularly useful for their work. Even within XYZ, a significant minority felt that way.

In most organizations, the scanning unit was seen as a staff support to top managers to help them both in planning and in control. It was not seen as particularly useful to line managers in the second and third levels of the corporate hierarchy, in their work of running the day-to-day business of the company. This is clear from Table 10:10 that

shows the perceived usefulness of the scanning unit by managers at different hierarchical levels. Sixty-nine percent of top managers feel that the scanning unit is useful for their work while only thirty and forty-three percent of middle and junior managers, respectively, see any use of the unit for their work.

Table 10:10 - Perceived usefulness of the scanning unit at different levels of corporate hierarchy

		Management level		
		Top	Middle	Junior
Corporate scanning useful	Yes	5	12	28
	No	11	5	21

A different measure of the usefulness of the scanning unit is the extent to which other managers interact with the unit. Table 10:11 shows the distribution of such interactions within the XYZ Berhad. All the five respondents reporting six or more interactions over the preceding six months, were found to belong to the planning function. Thus, for managers in operating units, the average level of such interaction was less than one per month.

Table 10:11 - Interactions with the corporate scanning unit : XYZ (P) Berhad

	Number of interactions with scanning unit in preceeding six months				
	0	1 - 2	3 -5	6 - 10	> 10
Frequency	6	3	10	2	3

Another related question asked to the respondents was how seriously would their work be affected if the corporate scanning unit was abolished [measured in a scale of 1 (very

seriously) to 5 (not at all)]. The results are shown in Table 10:12. As can be seen, the distribution is skewed toward the left but thirteen out of the twenty-four managers returned a score of three, four, or five which, given the context, must be interpreted as suggesting that no very serious impact of abolishing the scanning unit was anticipated.

Table 10:12 - Effect on work performance if scanning unit is abolished : XYZ Berhad

How seriously would your work be affected if the corporate scanning unit is abolished?		Frequency of response
Very seriously	1	3
	2	8
	3	9
	4	2
Not at all	5	2

In view of the strong corporate philosophy about the importance of scanning, the substantial resources invested on the corporate scanning unit and the high visibility and support available to the unit within the company, the response is surprisingly negative.

STRENGTH AND WEAKNESSES OF A FORMAL SCANNING ORGANISATION

A corporate scanning unit has both advantages and disadvantages with regard to the overall external intelligence function of the organisation. This is manifest from the discussion in the two preceding sections. On the one hand, each manager interviewed could readily provide instances where they benefitted from information provided by the scanning unit. Yet, their general perception about the unit showed only modest enthusiasm, at best, and the perceptions of the middle and junior managers were considerably more negative than the anecdotal evidence of the usefulness of the unit would suggest.

To understand the benefits arising from a formal scanning unit, one should be distinguish between two kinds of external information that an organisation utilises for two different types of purposes. Information from the immediate task environment is primarily used for tactical or operational decision making; information from the broader environment is, in contrast, utilised for purposes such as long term planning. Whether this is as thing should be is not the issue here. What matters is that organisations tend to deal with external information in such a compartmentalised manner.

Figure 10:7 - The "Policy" and "Operation" intelligence system

		Environment sector	
		Area of Influence (current task environment)	Area of Interest (broader environment)
Use of external information	Tactical and operational	OPERATIONAL INTELLIGENCE SYSTEM	
	Strategic and long term		POLICY INTELLIGENCE SYSTEM

In both the institutions that the writer studied, the external intelligence function was managed through two quite distinct systems. The system for monitoring the broader environment - the Area of Interest, to refer back to the terminology of Montgomery and Weinberg (1978) - was almost entirely dependent on the formal scanning unit with very limited involvement of the operating managers. For monitoring the task environment - the Area of Influence - on the other hand, the principal responsibility for both acquisition of information and its interpretation lay with the operating managers and the main role of the scanning unit was only that of an internal PABX, *i.e.*, for internal circulation and

communication (see Figure 10:7).

Following Wellinsky, the first system, is adopted, as the "Policy Intelligence System". In this system, the scanning unit is responsible for all the functions of the information cycle : it directly acquires relevant information from sources such as publications, consultants, research organisations, *et cetera*, and carries the principal responsibility for analysis and interpretation. This information is then made available to the top management as an input for what is clearly a top-down planning process. Vision '87 is an example of this "Policy Intelligence System". The annual process in XYZ (P) Berhad also uses similar policy intelligence as a basis for quota setting. At ION Sdn Bhd too, information from the broad environment is used only for such long term purposes. Such information rarely has any direct or immediate effect on day-to-day operations and does not need a close integration with the tactical or operational decision making. Line managers are usually ineffective for collection of such information. It is for collection and interpretation of such information that specialised staff are particularly useful. Such information are also rarely available through modes other than *formal search*.

For interpretation of such information, special academic training or experience is usually helpful. Recall that the RI section in XYZ was almost exclusively staffed with specialists who had no line experience within the company but had experience as economic and political analysts. However, as was discussed later, this might be one of the weaknesses of the XYZ system. Interpreting the possible effects of broad economic and political trends on a particular business needs an understanding of both the concerned disciplines and theories and also of the nature of the business. Thus, while line managers are usually ineffective in collection of such information, their operating experience within the company may often be useful for the interpretation process.

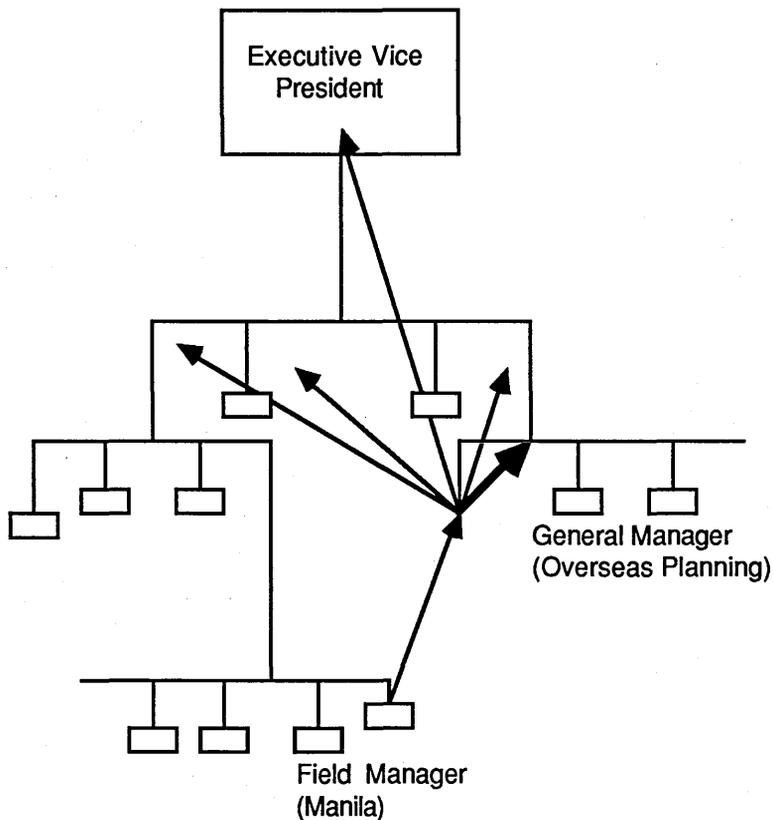
The second system, which is termed here as the "Operational Intelligence System" is managed quite differently from the first. In this system, the formal scanning unit plays a much less significant role. Acquisition of relevant information is almost entirely left to the line managers. As discussed in chapter six, the operative units have access to the information network consisting of industry members who are the principal sources of such information. Such information is also often available through *surveillance* rather than through *search*. Even for interpretation of such information, an intimate knowledge of the business is usually required and this makes the line managers rather than the scanning staff more suitable for this purpose. The principal function of the scanning unit, for the operational intelligence system, lies in internal communication. However, to serve even this role as a corporate PABX, the scanning unit needs the ability to relate the information to their possible business implications. For instance, OP section in XYZ needed to know about the company's involvement with the construction firm that was about to go bankrupt so as to be able to direct the information to the appropriate division. In other words, for satisfying the communicator's role in the operational intelligence system, the scanning units requires to have a certain amount of experience with the company's operations. XYZ clearly understands this need : recall that while the RI section was staffed with specialists, OP section was staffed exclusively with experienced line managers.

In specific terms, this communication functions of the scanning unit within the operational intelligence system provides two benefits to the company:

1. It reduce distortion and time-lag in the internal flow of information. Let us clarify the point here, by taking the musical instrument case as an example. A piece of information collected by a field manager in Manila reached every senior managers of the company, without distortion and within two days, through the DI system. In the absence of an organisational unit such as the scanning section, the same information would flow up through the regular organisational hierarchy and the probabilities are high that it would either not have reach the Executive Vice President (who initiated the action described in the case) or, even if

it had reached him, it would have taken a far greater amount of time thereby reducing the organisation's flexibility of response. Wellinsky (1967) had highlighted this problem of organisational hierarchy affecting the organisational intelligence function.

Figure 10:8 - Overcoming the information pathologies of hierarchy



The scanning unit, in fact, exactly fits one of this proposed solutions to overcome what he calls "the information pathologies of hierarchy" : it provides a mechanism for communication outside of channel through "internal communication specialists" (See Wellinsky, (1967) p47). This advantage of bypassing hierarchy through the scanning unit was mentioned by three relatively junior line managers in the headquarters and, as far as foreign branches were concerned, this was perhaps perceived as the single most useful attribute of the formal scanning departments.

2. The scanning unit provides an information matrix between product and market divisions. Like all other major MBIs, XYZ is organised in product divisions in the headquarter but area-wise in the branches (except major subsidiaries which are also organised by products). This creates a problem of information sharing between the product and country organisations. Information tends to travel upward but not across. This problem of information flow in multi-national corporations have been documented and discussed by many researchers (see Leksell, 1978; Hedlund, 1981; Edstrom and Galbraith, 1977). The only structural solution proposed is the matrix (Davis, 1976) but this has not proved to be very useful in practice (Bartlett, 1979). The scanning unit provides some of the benefits of the matrix without its cumbersome operational implications. At least important external information is distributed among both the product and the area units thereby providing a common data base for both to work from. An example of this benefit arose from the Dash report quoted earlier in this chapter. The country organisation in Iraq reported the sudden increase in purchase of cloth for military uniforms. The scanning unit circulated this information to all the product divisions as well as to the relevant country organisations along with a warning that the implication might be the possibility of a major escalation of the war and possible delays in payment for materials not related to the war effort. Based on this report, the fertiliser division delayed supplies and avoided a major problem of fund blockage. The country unit in Iran also used the same information to prepare for a possible increase of tenders for certain defense-related items. In effect, the scanning unit provided an information matrix within the company.

The principal disadvantage of having a separate scanning unit (or Environmental Analysis or by whatever name such a unit may be called) is that it tends to standardise the external intelligence function within the organisation. For organisations operating in different industries and in different markets, such standardisation may not be appropriate. The competitive position of a firm as well as its strategic objectives may vary by industry, product, segment and market. This may require different approaches to environmental information reflecting those differences in competitive positions and

organisational goals. A formal scanning unit, through formalisation, standardisation and centralisation, reduces the organisation's ability to differentiate its scanning to meet the specific circumstances for different operations.

Let us clarify this issue through two examples. Mr Stephen Chin, Executive Director of Electronics division at XYZ trading was one of the senior executives who clearly confirmed that the formal scanning was of little help to him. "The information needs for electronics are very different from those for steel, textile or chemicals. In electronics, product differentiation is vital. So, I need to know about new technologies that are available in the market; about new features introduced by different manufacturers; about changes in styling and designs. My TV business is not going to be affected as much by changes in national income as by the introduction of the compact disc or other leisure products. The product and the technology rather than the market is most crucial for me. On those, I get little (information) from the scanning unit. Even the country managers are not of much help now, though they are getting better as they are getting more familiar with the business. As of now, I have to mostly depend on tours of head office managers. Visiting trade shows and reading technical and trade journals are the most useful way for me to get market intelligence."

A similar view as expressed by Mr Pathman, manager of ION Berhad footwear division. ION Berhad is the largest exporter of footwear from rubber rich Malaysia and has the largest rubber footwear producing plant in Asia, perhaps in the world, (daily production capacity of 150,000 pairs). The local demand for the product is insignificant and almost the entire production is exported. "Our position in the footwear market is entirely different from our position in, say, the toy market. Even small changes in regulations or competition affects the footwear business much more because of our competitively large volume. For my business, I need a much close monitoring of regulatory changes : I must see the warning much before the change actually take place. I cannot depend on the Research Department and have to collect my information

myself". In effect, what Mr Pathman was saying was not adequate for him, given the company's leadership position in the industry.

This problem is not seen to be very serious in single industry firms, though even in such organisations scanning can be profitably differentiated by market or by segment. But, in multi-industry organisations, particularly in a multinational trading company, such formalisation may have serious adverse effects on the level of organisational ability to monitor external change. By enforcing a set of common rules about collection and internal processing of external information, the organisation may lose the advantages of diversity of spontaneous scanning by individual managers. Such a possibility was suggested by Aguilar : "Thus the seeming paradox could arise where creation of a special unit to institutionalize strategic search could lead to an overall decline of strategic scanning by the company." Aguilar, (1967, p139).

INTEGRATING LINE AND STAFF: THE USE OF SCANNING TASK FORCE

The managers responsible for the scanning unit in all the three companies were unanimous in their view that the single most important problem for a formal scanning unit was to obtain and maintain active involvement of line managers in the overall system for acquiring external intelligence. The DI system resulted in a degree of pressure that ensured their attention to external information but there was every possibility of the whole process degenerating into a paper shuffling exercise. The purpose of scanning was to help line managers and the only way it could be effective was if the line managers were actively involved in both the acquisition and interpretation process. Only then would the resulting intelligence be relevant and useful for the company. Yet, the scanning managers were also aware that they could not expect anything more than an absolute minimum of line managers' time or even interest, given their preoccupation with day-to-day operations. Herein lay the main organisational

challenge : how to integrate the line managers with the system for managing external information without demanding more than a minimum of their personal involvement with the process.

The involvement of line managers was required not only for improving the quality of the output by utilising their knowledge and experience but also for ensuring that the resulting analysis was actually used in organisational decision processes. If line managers did not feel a sense of involvement with, and ownership over, the intelligence output, it was only too simple for them either to deny its relevance or ignore it altogether.

The solution to the problem, in both XYZ and ION, was to use a structure of temporary teams to link the scanning unit with the different product divisions. Due to the isomorphic force of Mr Othman and his external coordination, the systems in both the organisations were quite similar. In XYZ, the teams were called "Marketing Task Force"; in ION, they were called "Departmental Information Monitors".

These structures are temporary teams that exist within each product divisions who are responsible for coordinating the external intelligence function of the division. Between one to four employees (depending on the size of the division) are nominated to the task force by the manager of the division. For the employees, it is an additional responsibility, over and above their normal duties. It is, however, an appointment that employee look forward to, for it conveys that the employee is doing well and has growth potential. Another attraction is a small budget that the task forces are given for entertainment, subscription to journals and other miscellaneous expenses.

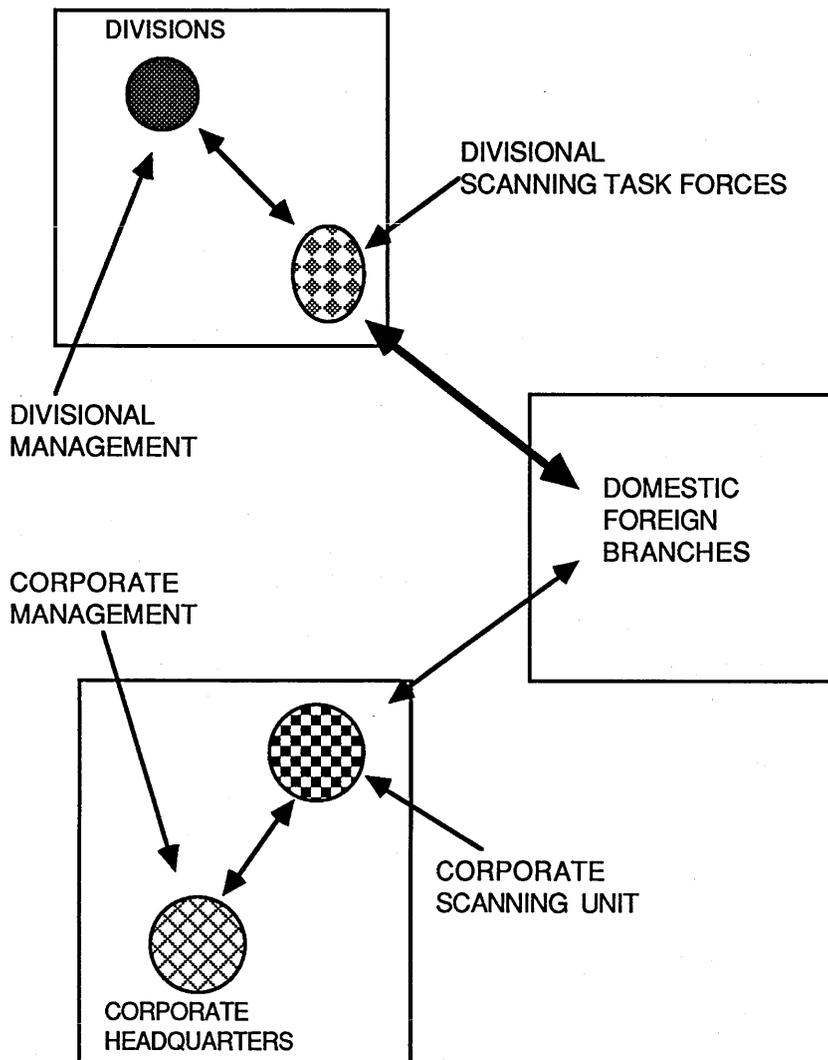
All dealings between the division and the corporate scanning unit are channelled through the task force (see Figure 10:7). The members meet for about half an hour every evening to finalise the division's DI and for approximately the same length of time at noon to go through the DI from the scanning unit. The task force is expected to discuss

the possible implications of any information that may come to the division either from the field organisation or from the scanning department and to communicate their analysis to the divisional manager who normally adds in his comments or suggestions before the analysis is sent to the scanning department through the DI. All too often, this is the only contact that the task force members have with the head of the division and the task is therefore considered to be important. For the manager, in turn, this becomes a quick and efficient way of keeping in touch with the latest scanning reports and also to contribute his analysis to the interpretation process. The task force is also involved when the annual divisional plans are finalised and one of the task force members actually works as the planning executive for the division.

The scanning unit arranges two annual meetings where all the task force members from all divisions are invited. In these meetings plans for improving the scanning system of the company are discussed. In addition, many of the task force members are also sent to the training courses and meetings arranged by KUMA, the consulting firm owned by Mr Othman. The meetings and training sessions are useful both for keeping up the morale of the employees and for updating their scanning and analysing skills.

One of the effects of the task force is that it allows for at least a degree of differentiation between the scanning system of the different divisions. The task force of each division is more aware of the specific scanning needs of the division and often can set up a separate system with the field units to meet those needs. The footwear division of ION, for instance, could arrange with the U.S. and Canada subsidiaries of the company so that a representative called on the concerned official of the Commerce departments once each month to discuss the regulatory situation and report directly to the footwear task force. In other words, the structure provided a mechanism for at least a partial decentralisation of scanning to the divisional level.

Figure 10:9 - Scanning organisation in a Malaysian commercial firm.



The scanning managers in both the companies felt that introduction of the task force concept had helped a lot in terms of integrating the line management of the company with the scanning staff and had helped in reducing the apathy toward the scanning department that used to exist earlier. The scanning department is at times viewed by experienced managers in operative divisions as a group of outsiders who do not really understand the business and this create an *ex-ante* resistance toward accepting any input provided by the department. Routing all inputs through the divisional task forces

reduced this resistance and helped to develop a more cooperative approach to the environmental analysis function. The system did not add much to the costs for it largely used slack resources available within the divisions. It used the strengths and resources of the line organisation while maintaining a centralised coordination and control over the overall scanning function. Finally, by using a temporary and *ad hoc* mechanism, it avoided the rigidities of a fixed structure.

To sum up, in this chapter, the writer described the organisational scanning system in one of the largest Malaysian business institutions and as well as some instances where the firm benefitted from the system. The evidence, however, suggests that such a formal scanning system with a separate corporate scanning unit offers both advantages and disadvantages and it had been suggested what some of them might be. Finally, the writer reviewed what he believes is a rather unusual innovation for overcoming one of the most difficult problems in institutionalising scanning, *viz.*, the difficulty in integrating the line managers and specialised scanners so that the strengths of both can be utilised for effective environmental analysis. The temporary task force structure described in the last section, is believed to be quite common in Japan but relatively uncommon in Britain and may be something that British managers would find worth emulating.

Chapter Eleven

Conclusion

CHAPTER ELEVEN

CONCLUSION

The introductory chapter discussed the two scanning issues selected as the principal research questions of this thesis. The first was to describe how individual managers scan the environment and to investigate the effects of different environmental, organisational and individual attributes on the scanning behaviour of managers. The second was to understand how the function of scanning might be organised at the firm level, in particular, to investigate the role and functions of a formal scanning unit. The selection of these two out of the menu of alternative research questions was grounded on the premise that an inquiry focussed on these two questions could lay an appropriate base for a broader research programme into the general phenomenon of scanning.

In this concluding chapter the task of the writer is to summarise the findings and to explicate their broad implications. A laundry list of all the associations and relationships suggested in this study is not necessary for this purpose. Instead, the writer begins this chapter by describing a few of the more interesting findings and then moves to an explanation of their collective significance for the overall organisational intelligence function. In drawing such implications, however, one is always forced to go beyond one's data. As McGrath (1972) points out, the process of research is a series of spirals and not closed circles. Drawing the implications, therefore, involves equal doses of induction, deduction and speculation.

SUMMARY OF FINDINGS

Importance of different kinds of environmental information and time spent in acquiring them :

An interesting finding of this study is the pattern of associations between perceived importance of different kinds of environmental information and the time spent on

acquiring them at different management levels (see Figure 7:10) For top managers, there is a close association between the two. For junior managers, there is no such association at all. Middle managers occupy a middle ground between these two extremes. The primary reason for this difference is that the perceived importance of different kinds of information is quite similar across management levels and is more or less balanced between the immediate task environment (*area of influence*) and the broader environment (*area of interest*). But scanning, at the lower levels of the organisation, is increasingly focussed on the immediate task environment, the broader environment, even though felt to be important, is ignored in terms of allocation of scanning time.

One possible explanation, in fact the hunch that lead the writer to this analysis, is that junior managers have less control over the allocation of their work time and the results are a manifestation of the urgent driving the important out of their work schedules. However, there is an alternative explanation and one that, based on the case-study data, the writer finds more plausible. The lack of a one-to-one correspondence between the importance of different kinds of information and the allocation of scanning time may be due to the organisational division of labour. Staff managers, as was argued in chapter nine, have an advantage over line managers in acquiring information on the broader environment. Such information is often readily available from published sources or from specialised consulting or research organisation which can be assessed centrally. At times special academic or professional expertise is useful for both acquisition and interpretation of such information. The business-specific knowledge and location proximity of line managers, on the other hand, are vital for acquisition and analysis of information related to the task environment. Thus, in most of the organisation included in this sample, information on the broad environment of the firm is collected by a special staff group (recall that 85 out of the 111 managers belong to organisations that had a formal scanning unit) and not by line managers. Therefore, what appears to be a discrepancy at the individual level may indeed be a manifestation of the efficiency of organising the scanning function at the firm level.

For top managers this discrepancy does not arise for the kind of information that is important for their tasks. There is no such division of labour within the organisation. Regulatory information, for them, is not information about regulations in place but information about regulatory changes that may occur. Such information is available only through contacts at the highest level of the Government or other organisations and can be acquired only through participation in the relevant network of connections. Staff managers of the firm usually do not have access to such sources and are, therefore, not particularly useful for collecting such information.

The observations of the writer in both XYZ Berhad and ION Sdn Bhd support this view. As was described in details for XYZ Berhad, the RI unit maintained a continuous flow of general economic, political and regulatory information to the line managers. It was not that the line managers did not have information about the broader environment; only, they did not have to collect it for the firm had a specialised system that made such information available to them internally. They could, therefore, devote their own scanning time to the task environment thereby exploiting their relative advantages of access and experience.

Flow of external information into the organisation.

Information specific to business is primarily available from those who are involved in that business. General information such as information on regulatory developments or on broad social, political or economic issues that are not specific to a particular business, on the other hand, is available more easily from general sources such as consultants and publications. This becomes clear when one juxtaposes information factors and sources (see chapter eight) and the finding is not counter-intuitive. However, it carries interesting implications for firm level organisation of the scanning function. In particular it supports the argument that the writer made in explaining the absence of a positive association

between the importance of different kinds of information and the time spent on scanning for such information. Staff managers do not have direct access to customers, suppliers and other members of the organisation's immediate task environment. Thus, they are relatively ineffective in collecting domain-related information, because such information is available primarily from these sources. Their role with regard to such task-related information lies primarily in collection and internal circulation so as to increase the scope of exploitation of information acquired by the line managers. The line managers, in turn, usually do not have access to this specialised publications and research like the consulting organisations who, as Figure 8:6 shows, are the principal sources for information on the firm's **area of interest**. This is where scanning by staff specialists is most useful. This distinction creates the need for a division of labour within the organisation for effective scanning of the external environment and this is why, in large and complex organisations, scanning has to be organised at the firm level and cannot be left as something that individual managers must do by themselves and for themselves.

Surveillance and Search

When managers perceive the external environment to be both unpredictable and heterogeneous, they depend relatively more on search for collecting external information. When the environment is perceived to be predictable and homogeneous, surveillance assumes greater importance for environmental scanning. Again, the finding (see Figure 8: 2) is not counter-intuitive. Surveillance is effective when a manager, confronted with a particular piece of information by chance, can readily understand the possible implications that the information may have on his business. In other words, the manager must have prior causal map that allows him to see such implications. If the manager does not have such a map, surveillance is ineffective for the manager cannot understand the significance of information that may flow by him. When the environment is highly complex (unpredictable and discontinuous), a manager does not have such a cognitive map and cannot benefit from surveillance. Under such situations, scanning must be

problem triggered (Collings, 1968) rather than being information triggered. Facing a specific situation, the manager must first understand exactly what information he wants and must then proceed to acquire it; *i.e.*, use the search mode for scanning. This is why search rather than surveillance assumes greater importance when managers perceive the environment to be complex.

Usually, over time and in relatively stable environment, managers develop an understanding of how different sectors of the task environment affect their objectives. For example, a manager often has a fairly clear understanding of how he may be affected by a price change announced by a particular competitor or a new capacity created by a buyer. In contrast, the effects of a change in the country's budget deficit or external relations is more difficult to interpret unless the business is such that the effect of such variables are direct and easily understood. Therefore, it can be argued that search is relatively more important for scanning the broader environment compared to scanning within the task domain since signals from the former are usually more difficult to interpret.

Two components of the organisational intelligence system.

These three findings, collectively, suggest a pattern. Scanning the task environment is a very different process from scanning the broader environment within which the firm has to operate. Information on the task environment is primarily available from customers, suppliers and other members of the industry. Line managers, with their connection within the industry, are best equipped to both acquire and interpret such information. They do so primarily through surveillance, *i.e.*, by remaining sensitive to the continuous flow of information around them in the regular process of their work. Information on the broader environment, in contrast, is available from public sources and are more conveniently acquired through search. Both the acquisition and interpretation of such information are facilitated by specialised knowledge about sources and about analytical and conceptual

expertise in understanding their implications. Expert staffs are, therefore, more suitable for this aspect of organisational scanning. This suggests that the organisational task of developing external intelligence can be divided into two broad components : one for monitoring the task environment and the other for monitoring the general social, economic and political developments. The mechanisms and instruments for the two components are quite different, suggesting that firms may need to organise them separately and differently.

As the writer discussed in chapter nine, this is precisely what firms do. At XYZ Berhad, the operational intelligence system and the policy intelligence systems are organised quite differently. In the policy intelligence system, a group of "experts" directly and centrally acquire relevant economic and political information with little involvement of line managers in the acquisition process. Similarly, even the interpretation function is almost entirely left to them. Such intelligence becomes a part of the top-down planning process and this component of scanning primarily serves as a research arm for the top management.

In the operational intelligence system, on the other hand, the role of the scanning staff is essentially that of internal PABX that circulates information internally. Both acquisition and interpretation is largely left to the line managers.

But even for such circulation, the scanning staff need to have an understanding of the business so as to perform effectively as a switching system. So, this part of the scanning unit is staffed with experienced line managers and not "experts".

Causal influences on managerial scanning behaviour.

One of the principal objectives of this study was to identify the factors that affect managerial attitudes and behaviours with regard to scanning. The writer of this thesis has considered various dimensions of individual level scanning including the perceived

importance of scanning, the time spent on the task, the relative use of surveillance and search and, finally, the extent to which scanning is domain-focussed. The writer has also investigated the effects of a number of individual, organisational and environmental variables on these dimensions of scanning behaviour. The findings, in summary form, are presented in Figure 11:1.

Figure 11:1 - Summary of associations

	Importance	Time spent	Domain-focus
WCF in comparison with NWCF	↑	↓	↑
Management level	↑	—	—
Entrepreneurial orientation	↑	—	↑
Extent of structure in task	↓	↓	↓
Perceived environmental heterogeneity	↑	—	↑
Perceived environmental predictability	—	—	↓

Recall that all the organisational and environmental variables refer to managerial perceptions rather than to any absolute reality. The most interesting of the findings are the effects of perceived environmental attributes and of the extent to which the managers perceived their jobs to be structured. The writer has discussed the possible explanations

of these associations in detail in the relevant chapters - particularly in chapter nine - and shall not, therefore, repeat them here. From a practical point of view what is important is that the influencing variables are managerial perceptions and these perceptions are not entirely beyond the organisation's ability to control and to change. Organisational structure and processes influence the enactment process through which managers perceive the environment and also the nature and complexity of their tasks. The amount of integration and differentiation in each organisational sub-unit determine how complex managers of the sub-unit perceive the environment to be. This suggests that individual level scanning within an organisation can be influenced through appropriate organisation design. This argument is developed in greater details in the following section on implications of this study.

IMPLICATION

Scanning is an instrument for organisations to cope with external change. Through scanning, an organisation is sensitised to the changes in the environment. It is the principal input to the learning process that in turn drives the mechanisms of organisational adaptation. Ultimately, therefore, the benefits from research on scanning must arise from a better understanding of its role in this process of organisational learning and adaptation.

Organisational learning

Cyert and March (1963), Terreberry (1967) and March and Olsen (1976) have argued that effective organisations are those in which members have a capacity to learn to predict changes in their environment, search for alternative sources of sustenance, and have a memory in which is stored information about possible interchangeable input/output components. Drawing from this proposition, Duncan and Weiss (1979) have defined organisational learning as "that process in the organisation through which members of the dominant coalition develop, over time, the ability to discover when organisational

changes are required and what changes can be undertaken which they believe will succeed" (p78).

A prerequisite for learning is a sensitivity to external changes that make learning and internal changes necessary. A closed system does not learn precisely because this sensitivity is lacking in such systems. The first component of organisational learning must, therefore, be this process of developing sensitivity to external changes. This is the "unfreezing" part in the Lewinian framework of planned change. However, given the perspective of learning as a continuous and endogenous process (as opposed to the concept of planned change that assumes the intervention of an external change agent), "sensitising" rather than "unfreezing" is perhaps a better label for this function.

Scanning is the principal means for sensitising the organisation. But, it is not the only means for, as argued by Duncan and Weiss (1979), experimenting (*i.e.*, building up a repertoire of action-outcome knowledge through a process of trial-and-error) and theorising (*i.e.*, theory or intuition based on deduction or induction) can also contribute to the sensitising process. Given the topic of this thesis, the discussion here should only be limited to scanning but the arguments are equally applicable to these other means of developing organisational sensitivity to change.

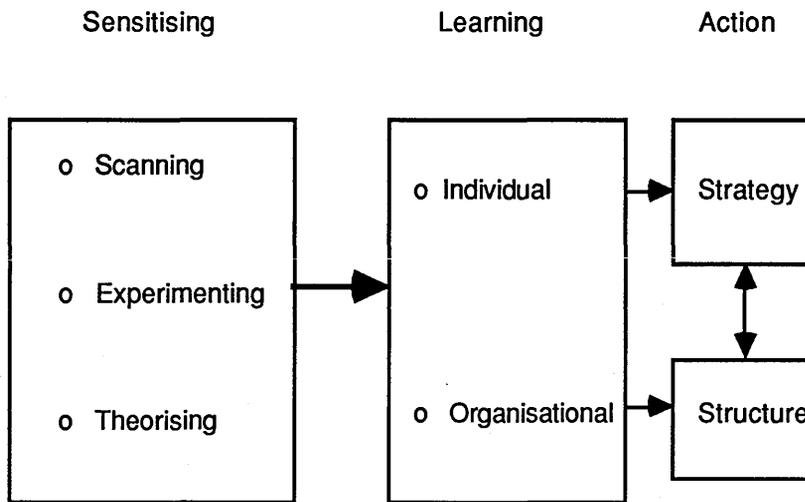
Sensitising in this view, is the process of building knowledge through information and analysis. However, an "organisation" cannot acquire information or analyse it - only an individual within the organisation can carry out such specific activities. Therefore, sensitising is essentially an individual level phenomenon. March and Olsen (1976) and Argyris and Schon (1976) visualise organisational learning as something that takes place at the level of individuals but within an organisational context. But, as suggested by Duncan and Weiss (1979), knowledge so accumulated at the individual level is fragmented according to the organisation's scheme of division of labour. Thus, the process of organisational learning, must include a sub-process that integrates individual

knowledge or learning to organisational knowledge. This is achieved primarily through intra-organisational communication.

Communication converts individual knowledge within an organisation to organisational knowledge through the processes of exchange, validation and acceptance (Duncan and Weiss). On the one hand these processes require physical facilities and systems for transmission of information within the organisation. On the other, they depend on the internal context of the organisation - on culture, morale and conflict - for the context determines the extent of acceptance that is a prerequisite for the knowledge to be organisationally shared.

Finally, organisational learning manifests itself through the organisation's strategy and structure. These are the organisational actions that reflect the "theory-in-use" (Argyris and Schon, 1976) developed through the learning mechanisms. Such theories pertain to action-outcome knowledge with regard to the organisation's interactions with the environment (strategy) and also the internal processes required to support such interactions (structure). The outcomes, in turn, interact with each other, and this is reflected through the two-way arrow between them (Figure 11:2).

Figure 11:2 - Organisational adaptation : A first cut



The Operational and Strategic Systems

Argyris and Schon distinguish between two types of learning. They call them single-loop and double-loop learning. In single-loop learning, "members of the organisation respond to changes in the internal and external environments of the organisation by detecting errors which they then correct so as to maintain the central feature of the organisational theory in use . . . (in such learning) there is a single feedback loop which connects detected outcomes of action to organisational strategies and assumptions which are modified so as to keep organisational performance within the range set by organisational norms. The norms themselves - for product quality, sales or task performance - remain unchanged" (p18-19). In double loop learning, on the other hand, "there is . . . a double feedback loop which connects the detection of error not only to strategies and assumptions for effective performance but to the very norms which define effective performance" (p22).

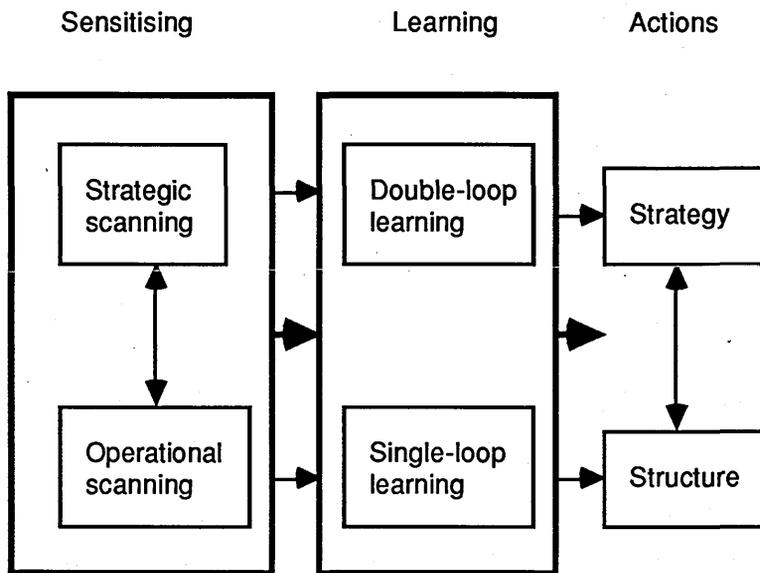
Single-loop learning, as described by Argyris and Schon, refers to the operational and tactical activities of the organisation while double-loop learning is akin to what may be

called the strategic processes. The distinction is somewhat fuzzy for, as Argyris and Schon themselves point out, "the distinction between single and double loop learning is less a binary one than might first appear" (p25). The moot point is that in single-loop learning (operational activities), the focal question is whether the organisation is achieving its objectives. In double-loop learning (strategic activities), the objectives themselves are subjected to questioning.

Similarly, for scanning, the writer has shown that there exist two distinct components that follow quite different processes and have different organisational implications. Strategic learning system is a search based on specialised function involving experts; operational scanning is a surveillance dependent function that is carried out by line managers in the regular course of their activities and is, therefore, highly dependent on what Burgelman (1983) calls the structural context of the organisation. In a way, strategic scanning supports the process of double loop learning and enhances the organisations' long-term effectiveness. Operational scanning, on the other hand, enhances short and medium-term efficiency and relates to what Argyris and Schon call single-loop learning.

This analysis leads to the more complex model of the organisational adaptation shown in Figure 11:3.

Figure 11:3 - Organisational learning : A second cut



Feedback Mechanisms and Strategic Autonomy

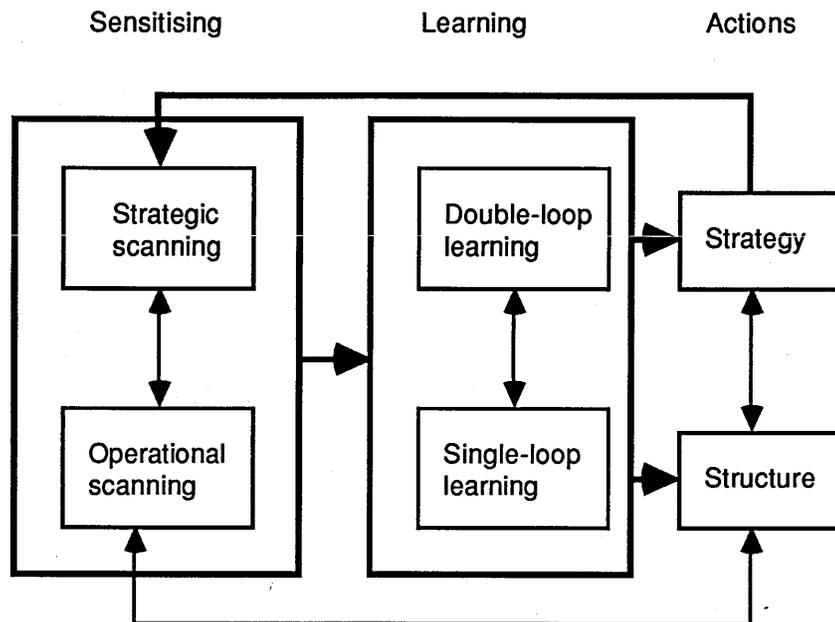
Even this model, however, suffers from a major weaknesses; it does not incorporate the feedback loops through which the organisational actions of strategy and structure influence the sensitising process thereby leading to "emergent" strategies and structures described by Mintzberg (1978), Burgelman (1983) and others.

The writer has argued in this thesis that the individual level scanning behaviour of managers and, hence, the operational scanning system of the firm, are highly influenced by a number of factors. These include certain personal characteristics of the managers concerned and also their perceptions of the firm's strategy and of the environment that it faces. In particular, it has been shown that the operational scanning system depends on the managers perception of the predictability and heterogeneity of the environment and of the extent of structure in their tasks.

These perceptions of managers, in turn, are influenced by the organisations' strategy and structure. As argued by Lawrence and Lorsch (1967), how complex the environment will appear to be to the managers of a particular organisational sub-unit depends on the extent of integration and differentiation that exists within the organisation with regard to that sub-unit. The higher the level of differentiation, the less complex is the enacted environment; the greater the level of integration, the more complex is the environment as perceived by the managers.

Combining these two arguments leads to the feedback loop from structure to operational scanning shown in Figure 11:3. Further, even the strategic scanning system, while relatively independent of the structural context, is influenced by the strategy of the firm. What facts the scanning unit will search for within the broader environment is at least partially determined by the goals set up by the firm and the means adopted to achieve them. For example, the Research Intelligence (RI) section of XYZ Berhad collects data on country A but not on country B; it analyses the market for product X but not for product Y and these decisions are determined by the current strategy of the firm. However, this is, relatively, a weaker link, because it is possible for the top managers to direct this system to go beyond the prevailing strategic context (as done in the case of "Vision '87"), thereby creating the scope for what Burgelman calls "autonomous strategic behaviour". The weak link is shown as a bold line in Figure 11:4.

Figure 11:4 - Organisational learning : Incorporating Feedback mechanisms



The strengths of these feedback loops depend on a number of factors. Two of them appear to be most prominent. First is the extent of goal-performance mismatch or more simply, the level of performance achieved by the firm. When the performance is deemed as unsatisfactory, the links weaken and this enhances the organisation's ability to resort to the autonomous strategy mode and permit more pro-active behaviour. In contrast, when performance is deemed to be satisfactory, the links strengthen, supporting the emergent strategy mode and, therefore, an incremental and reactive adaptive behaviour.

The second factor that influences the strength of the link is the nature of the firm's top management or dominant coalition. However, their ability to influence the sensitising process and the mechanisms through which such influence can be exercised may be very different for the operational and strategic processes. The contribution, if any, of this thesis to the practice of management lies in suggesting how such influences may be exercised and this is therefore discussed in detail in a later section on the role of the firm's

top management in enhancing the organisation's scanning capabilities.

Information value-added

Information differs considerably from conventional inputs to productive processes. The economic model of pure information emphasises that (1). it can be inferred and exploited by anyone, and (2). the scale of its use does not impair its use value.

In an imperfectly competitive market, competing firms earn different efficiency rents on productive factors, including information. They respond differently to available information and one of the sources of a firm's competitive advantages lies in the quality of its responses to environmental information. In other words, information entering the firm's boundaries may possess public goods characteristics but a firm can transform it so as to convert it to an appropriable and rent producing resource. This transformation process can be viewed as a system of value adding and differences between firms in their ability to add value to external information, by this argument, may be one source of the differences in their learning and adaptive capabilities.

The concept of "value added" is crucial for both improving and understanding the scanning process. Firms operate in a sea of information, only some of which they can appropriate and utilise. The first and essential step in the value adding process, therefore, is "recognition", *i.e.*, the identification of a particular piece of information as potentially relevant. If the information resides only with the original "recogniser", however, the value-added may be less than if it is recognised as a resource with wider potential applicability and is circulated to others within the organisation who might possibly benefit from the use of such information.

Some information may require little more than this : the implications of its action may be at the same level as the information itself (for example, competitor X has lowered the price of one of its products). Some other pieces of information may not be received at

such a level (for example, a bishop has been shot in a particular country in Africa where the firm has extensive operations) and may require interpretation to have implications for use. Such interpretation can take two forms : one is to put several pieces of information together to form a larger picture ("synthesis"), another is to fit the piece of information into a causal map that derives its implications through a process of implicit or explicit hypothesis generation and prediction ("hypothesis"). These four processes - recognition, circulation, synthesis, and hypothesis - are the fundamental elements of the mechanism through which value is added to information within the firm.

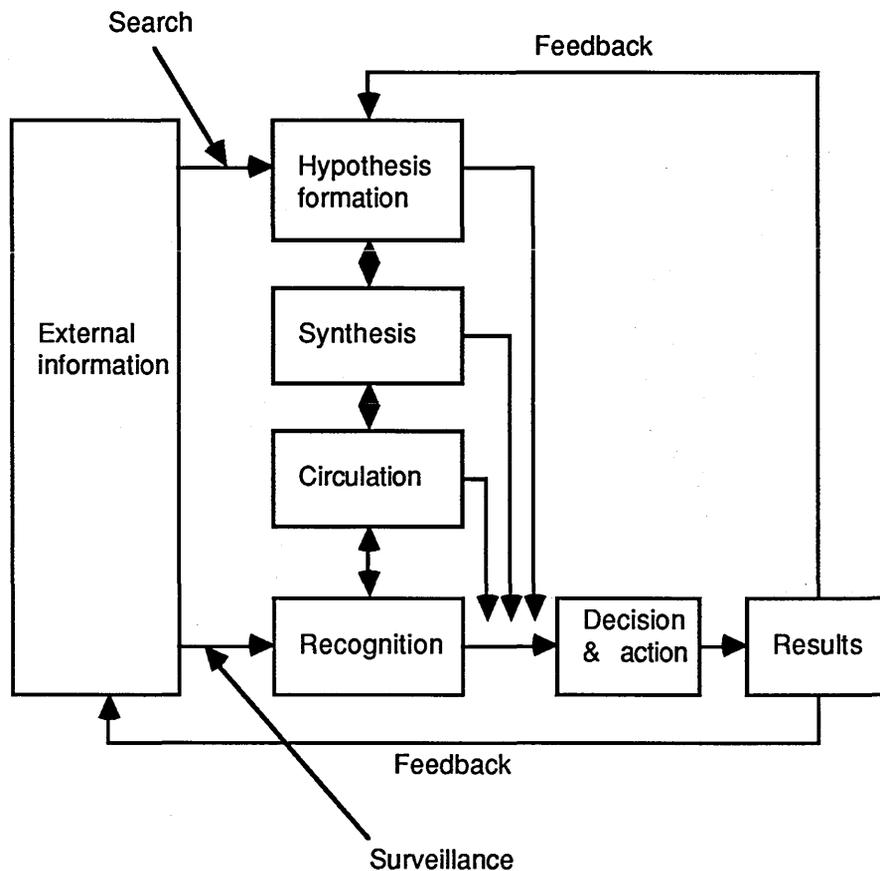
In this thesis, example of each of these value adding processes have been seen. Let us for a while recall the construction company case in chapter ten to show how these processes work. The recognition phase took place when the salesman identified the potential value of a piece of information that he came across quite by chance in a stockbroker's office. This piece of information was circulated by the domestic sales division, thereby reaching the corporate scanning unit who were in a better position to evaluate its potential usefulness. The synthesis phase took place when the finance department put this information together with others to arrive at the interpretation that a major customer was facing a serious cash flow problem. The hypothesis-forming processes that followed led to a prediction and, based on the prediction, to a series of actions at different parts of the organisation which resulted in both averting a potential problem of bad debts and also the identification of an acquisition opportunity.

This view of information value adding is represented in the model shown in Figure 11:5. Scanning, as has been discussed throughout this thesis, takes place in two modes. The **surveillance mode** and recognition driven while the **search mode** is hypothesis driven. Value is added to information through a combination of the four sub-processes and such value added information is used as an input to decision making within the organisation. The outcomes from such decisions leads to changes in the explicit causal maps that drive

the information-search process. Further, the knowledge of such outcomes also affect the complex gestalt that lies behind the recognition procedure. The process of scanning is therefore seen as a complex and dynamic phenomenon that changes continuously as new knowledge about action-outcome consequences develop within the firm.

This concept of information value added permits a clearer understanding of the different roles of line managers and "expert" scanning staff within the overall scanning system of the firm. It also highlights the importance of the interactions that must exist between them for the firm to obtain maximum benefits from the information value adding process. It is only with regard to the recognition and circulation functions that their roles are distinct and substantially non-overlapping. Line managers are the principal sensors for recognition of operational information while expert scanning staff are particularly suitable for recognition of relatively weaker and more complex signals from the broader environment. The formal circulation function is primarily the responsibility of the staff unit even though, in actual practice, considerable amount of internal circulation of external information may take place directly among the concerned line managers. But, for the synthesis and hypothesis-formation processes, no such division of labour is possible. These processes require effective collaboration between the two groups, as indeed was noted in each of the cases cited in chapter ten. The extent of such collaboration in any firm depends on both formal structural arrangements as well as on formal and informal processes and it is through creation and enhancement of these mechanisms that the top management of a firm can improve the organisation's scanning and value adding capacities.

Figure 11:5 - The information value-adding process



**DESIGNING THE ORGANISATIONAL SCANNING SYSTEM :
ROLE OF THE TOP MANAGEMENT**

In understanding the role of the top management of a firm in designing and institutionalising an effective scanning system, a clear distinction must be made between the strategic and operational scanning processes. The first can be designed and operationalised directly and more or less independently of the rest of the organisational processes. Managers can create a special intelligence organisation, staff it with appropriate experts, lay down intelligence objectives and exercise suitable control to ensure that the system does what it is supposed to do. The operational scanning system, in contrast, depends on the general sensitivity of line managers to information that they

come across in the routine course of their work and on organisational systems that can pick up and circulate the fruits of such organisation-wide surveillance. The processes are closely interlinked with the overall structure and culture of the organisation and the principal mechanisms for influencing these processes are indirect, through suitable adjustments in the structure and systems of the organisation so as to create appropriate internal conditions in which such information-sensitivity can develop and be nurtured.

In this section, the writer first discusses the role of the top management in creating an effective strategic system. He also briefly reviews the problems that may be faced in the process and offers some speculative suggestions about how some of them may be overcome. Next, he discusses the role the top management can play in making the operational scanning system more effective.

The Strategic Scanning System

The starting point for a strategic system is the information needs of the firm which must determine the objectives of the system. In fact, one of the reasons that has led to fairly wide-spread disappointment with scanning systems (see discussion in chapter two) is that often managers do not pre-specify the objectives that scanning is supposed to serve. The result is acquisition of information that may not be relevant or the nature of relevance may not be understood.

An organisation faces a number of problems in laying down scanning objectives. Scanning is an instrument to avoid surprises. The sources and nature of surprises, by definition, cannot be determined on a-priori basis. Yet, to keep scanning within tangible and finite limits, a way has to be found to pre-select areas of attention. Herein lies the problem in specifying scanning objectives.

In chapter two, the writer has briefly discussed the different models proposed by academics and practitioners for designing a strategic scanning system. In all these models, the first step in determining scanning objectives is to define organisational objectives (or strategies) and, hence, the relevant performance variables that would affect achievement of those objectives. Once the performance variables are defined, scanning objectives can be determined by identifying the issues that can affect the performance variables and the possible influences of different actors on those issues and, therefore, on those performance variables. Scanning can then be focussed on those issues and actors. Identifying performance variables, the relevant issues and the influencing actors are often highly subjective processes but there is evidence that consensus on these questions can be built up through a series of meetings and conferences involving the relevant organisational members (see, for example, Kalff, 1980).

In determining the scanning objectives, it is necessary, however, to keep in mind that most business systems are highly complex and involve processes that are multivariate, heterogeneous, multidimensional and causally confused. For most firms, causes and effects are extremely difficult to disentangle, as are facts and values. The methods for determining scanning objectives are usually based on the assumption that managers can construct meaningful causal models that determine firm performance. There are two reasons why this assumption may not be true. First, managers, in certain cases, may indeed have such a causal map but it may be implicit and may remain as a part of the gestalt that even they cannot vocalise. Second, they may not have such a map and may believe, correctly or incorrectly, that it is not possible to construct such a map given the intangibles inherent in any large business. These are not grounds for giving up on the attempt to define strategic scanning objectives; there are arguments to suggest that the methods for determining the objectives may be different under different circumstances. Further, in most complex organisations, it may not be useful to try and make the process of arriving at the objectives too "scientific" for such methods are often too reductionist, given the richness of reality. Softer methods such as the "dialectic confrontation" method

of Ansoff (1977): MAPS technique and Delphi based scenario planning techniques may be more effective in flushing out the scanning objectives than industrial organisation theory based approaches suggested by Porter (1980) or cross-impact analysis procedure developed by the General Electric Corporation in the United States.

Another important aspect of the strategic scanning system, and one in which the top management of the firm is required to play a key role, is the need to adapt the system to the strategic position of the firm. All firms are not pro-active *prospectors* in the marketplace. Most are *reactors* to changes that have already occurred or stodgy *defenders* of their existing positions. And, given the firm's position in the industry, such strategies may not often be quite appropriate. Yet, the strategic scanning system is often based on the implicit assumption that the firm is a *proactive*, opportunity-seeking entrepreneur. Because of this assumption, such scanning systems attempt to cover a far larger opportunity domain than the top management of the firm is actually willing to admit to its feasible set. Often this is the principal cause for diverting scanning from strategic decision making.

There are a number of dynamic factors that tend to exacerbate the problem. On the one hand top managers are loathe to admit that they are anything other than highly entrepreneurial hunters of fortune. This encourages the scanners to spread their net wide to begin with. Then the dynamic of the scanning process takes over and the excitement of research (biased further by the ease of availability of particular kinds of information) widens the gulf between scanning attention and the realities of the firm and its business. At the end, line managers are frustrated, for scanning gives them nothing useful, and the scanners are bewildered for they cannot understand what went wrong.

Here again, the argument is not that scanning must confirm rigidly to the firm's inertia

but against the assumption that the inertia can be changed by information alone. Strategic scanning can and must be an agent for change, but change that comes gradually, "incrementally", and not in quantum leaps.

The Operational Scanning System

In designing the strategic scanning system, the managers of a firm can, generally, follow the traditional concept of the information cycle discussed in chapter two. They can first determine the information needs of the firm, then set up methods for acquisition, interpretation, communication and use of such information. For the operational scanning system, however, the entire model break down because it is no longer possible to determine information needs a-priori, nor is it possible to get up mechanisms for acquisition and interpretation in a formal way. Instead, a firm must depend on the large body of its line managers to be sensitive enough to filter the importance from the massive flow of information around them. *Opportunistic surveillance* rather than *proactive search* is key to an effective operational scanning system. Top managers can influence this system only through the structural context of the firm that, as the writer has shown in this thesis, determine the nature of operational scanning.

By structural context, it means more than the way the boxes are located in the organisational chart. It includes both the formal structure and the emergent one. It also includes both permanent and temporary structures as well as formal and informal processes. It is the overall mechanism in the organisation that determines the flow of information, the process of decision making and the allocation of responsibilities.

The top management must involve its own map of how the structure affects the organisation's ability to monitor key environmental attributes. In constructing this map, they can obtain relatively little help from theory or generalisations, for the map is highly

situation-specific. It depends on the nature of the environment that the organisation faces, its niche within that environment, its key success factors and, above all, on the people who man the boxes in the organogram : the individuals, their strengths and weaknesses, their values and beliefs. In constructing this map what is important, therefore, is the top management's ability to identify the unique aspects of the firm rather than the general.

It is then the task of the top management, with appropriate staff help, to determine the extent of integration and differentiation (Lawrence and Lorsch, 1967) that should exist in different organisational sub-units. Such integration and differentiation, as has already been argued earlier on in this chapter, significantly affect the nature of operational scanning by individual managers in those sub-units. In some functions such as R&D and product development, broad base scanning with specific attention to activities and developments beyond the task environment may be essential. In certain other functions such as component production or assembly, more domain-focussed scanning may be more appropriate. Determining the more appropriate focus of operational scanning for each sub-unit depend not only on the nature of the external environment but also on the firm's strategy for, at a particular point of time, the strategic objectives with regard to each of the sub-units may be very different. Sub-units that can benefit from an exposure to the wider environment (and hence, from an increased perception of uncertainties), must be relatively overintegrated. In plainer language, this means that more lateral relations need to be created in those units through task forces and special terms; roles and functions of individuals must be left as relatively ambiguous and overlapping, and a degree of slack must be made available in terms of resources such as management time and discretionary funds. On the other hand, sub-units that should be protected from such uncertainties should be relatively over-differentiated, with clear allocation of tasks and roles and with higher degree of task specification.

The Formal Scanning Unit

An important aspect of designing the organisational scanning system is the creation of a coordinating and integrating mechanism that usually takes the form of a special scanning unit. In the introductory chapter, the writer has referred to the evidence that more and more firms, in the United States and elsewhere are creating such units. This leads to a number of questions that the top management of the firms must confront : what should be the role and functions of this unit and how should they be related to the rest of the organisation; how should the unit be structured; where in the organisation should it be lodged; and how should such a unit be staffed.

The principal suggestion that follows from the arguments developed in this thesis is that the role and functions of this department must be very different for the strategic and the operational scanning systems. For the strategic scanning system, this unit must have the primary responsibility for the entire intelligence function including acquisition of necessary information, their interpretation in terms of the strategic implications for the firm, and their communication to appropriate managers within the organisation. For the operational scanning system, in contrast, the primary role of this unit must be internal communication : it must act as an internal PABX for circulating the information inside the firm but the responsibility for both acquisition of information and for interpretation must lie with the line management. It has already been explained at length why this must be so and those argument need not be repeated.

A second suggestion that follows from the writer's observation in the Malaysian institutions is that two kinds of staff are required to manage the two components of the unit's functions. The strategic scanning task can benefit from the relevant managers having requisite analytical and technical backgrounds for knowing where to look for needed information and how to analyse and interpret it. Thus, "experts" such as trained economists, political scientists and technologists are useful for this task. The unit's role

as a communication node for the operational scanning system, on the other hand, can be best served by people who have a better understanding of the organisation and of its businesses. Experienced line managers rather than "experts" are, therefore, more useful for this component of its functions.

Understanding the differences between these two components of the scanning function is important for appropriately structuring each activity. An even more critical task, however, is the integration of the two components for maximum value adding, particularly through the synthesis and hypothesis generation processes. In both XYZ Berhad and ION, this was done through the mechanisms of scanning task forces. This approach, as argued in chapter ten, offer a number of benefits and organisations not having such a mechanism may find it worth emulating. But, clearly, there can be other ways to provide such integration and identification and evaluation of these mechanisms is an important research question that, along with the many others that the writer had raised along the way, must remain as tasks for future researchers.

Suggestion for Future Research

It is customary to conclude a thesis with suggestions about future research that emerge from the findings of the one being reported. If past history is any guide, it is perhaps also customary for such suggestions to be totally ignored.

Therefore, instead of providing a long list of things about scanning that may be interesting to know, the writer mentions here only two issues that he feels excited about and on which he hopes to do follow-up research in the near future.

First and foremost is the question of usefulness of scanning. In this study, the writer provides anecdotal evidence to show that a firm can benefit from both strategic and operational scanning. What, however, is required is a more systematic inquiry into the way the output of the scanning function is used (or not used) by the firm. For such an

inquiry, historical reconstruction would suffice because of the many well known biases that such a methodology suffers from. Only a real time monitoring of how the decision makers utilise the information can provide reliable insights on this use process. And, only a longitudinal research design is appropriate for achieving this objective. Such an inquiry may show that different kinds of information are used to different extents under different circumstances. Understanding those contingencies can have extremely useful theoretical and practical implications.

The second question pertains to the issue of cost-effectiveness of scanning. In the scanning literature there seems to be an implicit assumption that more is always better. Perhaps, this follows from the role of information as signals and as symbols that has been pointed out by Fieldman and March (1981). Organisations are spending increasing amount of resources on the scanning function and often, given the nature of the task, the actual expenses are hidden and may be much more than imagined. Up to a certain level, acquiring environmental information and analysing them may provide positive value for the firm; beyond that level, scanning may not be cost-efficient. Certain kinds of scanning may be, in terms of the resources invested, be more productive than others. Under certain conditions - both of the environment and of the strategic position of the firm - more scanning may be required; under others a lot of the scanning efforts may be spinning wheel with no tangible benefits for the organisation. This is a question of great practical significance but an inquiry on this issue can also provide interesting theoretical insights about the organisational learning and adaptive processes.

The concept of information value added may be extremely useful for pursuing both lines of inquiry. In the writer's discussions with managers in Malaysia (during the field survey) and earlier on in the United States (when doing the MBA programme), it is this issue of value adding that has consistently emerged as a major concern both for top managers who must decide on the resources to be invested for scanning, and for the special scanning staff who require some norms for evaluating their own work. Research

on scanning has traditionally focussed on only the recognition process. But, as argued earlier, all the value adding processes are closely interlinked. To develop a better understanding of the benefits that a firm may derive from environmental scanning and also to make any prescriptive suggestions about how the activity should be organised, all the components of the value adding process need to be considered jointly and not in isolation.

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