CORPORATE INTELLIGENCE GATHERING --
SCANNING FOR INTERNATIONAL BUSINESS INFORMATION

by

SUMANTRA GHOSHAL

B.Sc., University of Delhi, India
(1968)

MBA, University of Calcutta, India
(1979)

Submitted to the Alfred P. Sloan School of
Management in partial fulfillment of
the requirements of the degree of

MASTER OF SCIENCE IN MANAGEMENT

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

May 1983

© Sumantra Ghoshal 1983

The author hereby grants to M.I.T. permission to reproduce and to dis-
tribute copies of this thesis document in whole or in part.

Signature of Author: Alfred P. Sloan School of Management, May 6, 1983

Certified by: Dr. D. Evan Westney, Thesis Supervisor

Accepted by: Jeffrey A. Barks
Director of Master's Programs
CORPORATE INTELLIGENCE GATHERING -
SCANNING FOR INTERNATIONAL BUSINESS INFORMATION

by

SUMANTRA GHOSHAL

Submitted to the Alfred P. Sloan School of Management on May 6, 1983 in partial fulfillment of the requirements for the Degree of Master of Science in Management

ABSTRACT

A survey of the existing literature in the field of environmental scanning was made and an integrative model of the multinational scanning process was constructed based on the conceptualizations of past researchers in the field. This model categorized the scanning system in terms of factors and sources of information and the manners and modes of information acquisition.

A questionnaire survey was carried out to test the validity of the model. The results indicated certain severe limitations of the model. In particular, it was observed that categorization in terms of factors of information was inappropriate and that the model failed to explain the divergence in the results of the different studies in the field. The model was also found to be inconsistent with some of the observed influences of organizational and managerial characteristics on their scanning behavior.

A new paradigm was proposed to overcome this shortcomings of the existing conceptualization. While available data did not permit a reliable testing of the proposed framework, it was observed that some of the apparent inconsistencies among the different surveys as well as some of the more perplexing results of this study could be satisfactorily explained by the new paradigm.

Thesis Supervisor: Dr. D. Eleanor Westney

Title: Mitsubishi Career Development Assistant
Professor of International Management
ACKNOWLEDGEMENTS

A Hubert Humphrey Fellowship from the Institute of International Education permitted me to undertake graduate studies in Management at the Sloan School -- an experience that has enormously enriched me. This study, like everything else that I have done at M.I.T., would not have been possible but for the generous financial support from the IIE. I am most grateful to the Institute. I am particularly indebted to Dr. Michael Haviland, director of the Humphrey Program at the IIE for his understanding and encouragement.

I am grateful to Prof. Richard Robinson at the Sloan School and Prof. Lloyd Rodwin at the Department of Urban Studies and Planning at M.I.T. for their indulgence, patience and guidance.

Prof. Eleanor Westney made this assignment one of my most enjoyable academic experiences. I will never get over the guilt feeling of having taken far more of her time than I had a right to. I am also thankful to Prof. Morris McInnes for his suggestions and advice.

Finally, I am grateful to my father, my guide by word and example, whose counsel has been my greatest asset all my life.
# CONTENTS

<table>
<thead>
<tr>
<th>1. INTRODUCTION</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLLECTING INFORMATION - A PROBLEM 'FINESSED'</td>
<td>7</td>
</tr>
<tr>
<td>THE CHANGING CONCEPT OF INFORMATION</td>
<td>7</td>
</tr>
<tr>
<td>INFORMATION FOR INTERNATIONAL MANAGEMENT</td>
<td>8</td>
</tr>
<tr>
<td>NEED AND RELEVANCE OF THE STUDY</td>
<td>10</td>
</tr>
<tr>
<td>OBJECTIVE AND SCOPE OF THE STUDY</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. ENVIRONMENT, ORGANIZATION AND SCANNING</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>THE INTELLIGENCE CYCLE</td>
<td>12</td>
</tr>
<tr>
<td>INTERACTIONS BETWEEN THE ORGANIZATION AND ITS ENVIRONMENT</td>
<td>13</td>
</tr>
<tr>
<td>INFORMATION NEEDS</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. UNDERSTANDING THE SCANNING PROCESS</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td>HISTORICAL DEVELOPMENTS</td>
<td>19</td>
</tr>
<tr>
<td>THE THREE MODELS OF SCANNING</td>
<td>19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. THE MICRO VIEW OF SCANNING</th>
<th>21</th>
</tr>
</thead>
<tbody>
<tr>
<td>THE PROCESS OF INFORMATION ACQUISITION</td>
<td>21</td>
</tr>
<tr>
<td>THE FACTORS</td>
<td>21</td>
</tr>
<tr>
<td>THE SOURCES</td>
<td>23</td>
</tr>
<tr>
<td>THE WAYS</td>
<td>24</td>
</tr>
<tr>
<td>VALIDATING THE MODEL</td>
<td>27</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. SCANNING AS AN ORGANIZATIONAL FUNCTION</th>
<th>28</th>
</tr>
</thead>
<tbody>
<tr>
<td>A MACRO VIEW OF SCANNING</td>
<td>28</td>
</tr>
<tr>
<td>INTEGRATING SCANNING WITH CORPORATE OPERATIONS</td>
<td>30</td>
</tr>
<tr>
<td>AN INTERORGANIZATIONAL APPROACH TO SCANNING</td>
<td>32</td>
</tr>
<tr>
<td>PAGE</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td></td>
</tr>
<tr>
<td>6. THE CONCEPTUAL FRAMEWORK</td>
<td>35</td>
</tr>
<tr>
<td>INTEGRATING THE MICRO AND MACRO VIEWS</td>
<td>35</td>
</tr>
<tr>
<td>THE CONCEPTUAL MODEL</td>
<td>36</td>
</tr>
<tr>
<td>THE QUESTION OF ISSUES VS. FACTORS</td>
<td>39</td>
</tr>
<tr>
<td>THE EMPIRICAL SURVEY</td>
<td>40</td>
</tr>
<tr>
<td>7. RESULTS OF PREVIOUS STUDIES</td>
<td>42</td>
</tr>
<tr>
<td>PREVIOUS SURVEYS</td>
<td>42</td>
</tr>
<tr>
<td>RELATIVE IMPORTANCE OF FACTORS</td>
<td>42</td>
</tr>
<tr>
<td>RELATIVE USAGE OF SOURCES</td>
<td>45</td>
</tr>
<tr>
<td>RELATIVE IMPORTANCE OF MANNERS AND MODES</td>
<td>47</td>
</tr>
<tr>
<td>8. DESIGN OF THE FIELD STUDY</td>
<td>50</td>
</tr>
<tr>
<td>OBJECTIVES OF THE FIELD STUDY</td>
<td>50</td>
</tr>
<tr>
<td>THE RESEARCH INSTRUMENT</td>
<td>50</td>
</tr>
<tr>
<td>THE SAMPLE</td>
<td>52</td>
</tr>
<tr>
<td>IMPLEMENTATION</td>
<td>53</td>
</tr>
<tr>
<td>9. RESULTS OF THE SURVEY</td>
<td>54</td>
</tr>
<tr>
<td>RESPONSE RATE</td>
<td>54</td>
</tr>
<tr>
<td>COMPOSITION OF RESPONDENTS</td>
<td>55</td>
</tr>
<tr>
<td>IMPORTANCE OF FACTORS</td>
<td>56</td>
</tr>
<tr>
<td>INFLUENCE OF ORGANIZATION VARIABLES ON FACTOR IMPORTANCE</td>
<td>56</td>
</tr>
<tr>
<td>INFLUENCE OF MANAGER VARIABLES ON FACTOR IMPORTANCE</td>
<td>58</td>
</tr>
<tr>
<td>DIFFICULTY IN OBTAINING INFORMATION ON FACTORS</td>
<td>62</td>
</tr>
<tr>
<td>FLEX POINTS AND FACTOR IMPORTANCE</td>
<td>64</td>
</tr>
<tr>
<td>RELATIVE IMPORTANCE OF PERSONAL AND IMPERSONAL SOURCES</td>
<td>64</td>
</tr>
<tr>
<td>RELATIVE IMPORTANCE OF ORAL AND WRITTEN MODES</td>
<td>64</td>
</tr>
<tr>
<td>RELATIVE IMPORTANCE OF INTERNAL AND EXTERNAL SOURCES</td>
<td>65</td>
</tr>
<tr>
<td>Chapter</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>RELATIVE IMPORTANCE OF DIFFERENT INTERNAL SOURCES</td>
<td>67</td>
</tr>
<tr>
<td>EFFECT OF ORGANIZATION VARIABLES ON RELATIVE IMPORTANCE OF INTERNAL SOURCES</td>
<td>67</td>
</tr>
<tr>
<td>EFFECT OF MANAGER VARIABLES ON RELATIVE IMPORTANCE OF INTERNAL SOURCES</td>
<td>69</td>
</tr>
<tr>
<td>RELATIVE IMPORTANCE OF EXTERNAL SOURCES</td>
<td>70</td>
</tr>
<tr>
<td>EFFECT OF ORGANIZATION VARIABLES ON RELATIVE IMPORTANCE OF EXTERNAL SOURCES</td>
<td>70</td>
</tr>
<tr>
<td>EFFECT OF MANAGER VARIABLES ON RELATIVE IMPORTANCE OF EXTERNAL SOURCES</td>
<td>73</td>
</tr>
<tr>
<td>10. INTERPRETATION OF RESULTS AND ANALYSIS</td>
<td>75</td>
</tr>
<tr>
<td>RESERVATIONS</td>
<td>75</td>
</tr>
<tr>
<td>COMPARISON WITH PREVIOUS FINDINGS</td>
<td>78</td>
</tr>
<tr>
<td>11. CONCLUSION</td>
<td>84</td>
</tr>
<tr>
<td>DEGREE OF CONTROL</td>
<td>84</td>
</tr>
<tr>
<td>SUGGESTION FOR A NEW PARADIGM</td>
<td>86</td>
</tr>
<tr>
<td>12. ANNEXURE: THE QUESTIONNAIRE</td>
<td>92</td>
</tr>
<tr>
<td>13. BIBLIOGRAPHY</td>
<td>100</td>
</tr>
</tbody>
</table>
INTRODUCTION

COLLECTING INFORMATION - A PROBLEM 'FINESSED'

The largest growth sectors in the field of management literature over the last decade have probably been Strategic Management and Management Information Systems. Both fields have recognized the importance of 'information' in the overall management process and have devoted a great deal of attention on the internal analysis and 'management' of information to aid the managerial systems of strategy formulation, planning, decision making and control. Usually, however, the problem of obtaining information has been finessed by assuming the availability of the required information -- particularly so with regard to external intelligence and environmental information. To quote A. G. Kefalas,

It is apparent, however, that the entire subject of acquisition of information -- whether internal or external -- deserves more attention than it currently is being given. Most of the literature on decision-making models presupposes the existence of the information needed to 'plug into' the model.

THE CHANGING CONCEPT OF 'INFORMATION'

The growing acceleration of change in human society has rapidly changed the concept and role of information not only for business organizations but for all forms of human activity. Historical data has progressively lost relevance in predicting the future. The role of uncertainty has increased enormously; this in turn has caused almost a total change in the type and kind of information needed for decisions affecting the future. Nowhere, however, has the effect been more pro-
nounced than in the field of corporate management where increasing internationalization, growing organizational complexities, rapid technological innovation and intense social pressures have contributed to change the concept of information from its backward looking and internally directed orientation to a forward looking and externally directed process (Montgomery and Weinberg). The open-system concept has recognized the interdependencies between the organization and the environment and has caused a "steadily increasing importance of the external environment as a determinant of managerial policy setting, decision making and control" (Kefalas). Even the field of MIS has recognized the limitations of its earlier focus on internal and historical data and has started looking outwards and towards the future as manifested by the growing emphasis on concepts like Strategic Information Systems (SIS) and Environmental Management Information Systems (ENVMIS).

INFORMATION FOR INTERNATIONAL MANAGEMENT

All that has been said above for information management in general is equally true in the field of international business -- only the problems are vastly more complex. Going beyond national boundaries expands the heterogeneity of the environment and makes information needs more extensive as well as more intensive. The process of collection, processing and analysis also become more difficult and more expensive. A wide range of variables, often not considered relevant for decision making by purely domestic firms, becomes important in the field of international management. Fig. 1 charts some of the important variables in the field of international business and the resultant need for monitoring and collection of information (Robinson). The chart is only an
DIFFERENT NATIONAL SOVEREIGNTIES

DIFFERENT NATIONAL ECONOMIC CONDITIONS

DIFFERENT NATIONAL VALUES AND INSTITUTIONS

DIFFERENT STATES OF INDUSTRIALIZATION AND DIFF. NATIONAL POLICIES

GEOGRAPHICAL AND CULTURAL DISTANCE

DIFFERENT AREAS AND POPULATION

DIFFERENT POLITICAL SYSTEMS

DIFFERENT ECONOMIC SYSTEMS (CONDITION, GROWTH, DISTRIBUTION)

DIFFERENT SOCIAL SYSTEMS (ELITE-MASS, REFERENCE MODELS)

DIFFERENT MONETARY SYSTEMS

DIFFERENT SYSTEM OF FINANCIAL INSTITUTIONS

DIFFERENT LEGAL SYSTEMS

DIFFERENT NORMS OF BEHAVIOR

DIFFERENT COMMUNICATION SYSTEMS

DIFFERENT TECHNOLOGICAL SYSTEMS

DIFFERENT MARKET SIZES AND STRUCTURES

DIFFERENT NATURE OF COMPETITION

DIFFERENT PERCEPTION OF NEEDS AND VALUES BY CUSTOMERS

DIFFERENT ATTITUDES TO COMPANY

DIFFERENT TASTES

POLITICAL SYSTEM-RISK, VULNERABILITY

BROAD ECONOMIC ISSUES - PLANS, GROWTH, DISTRIBUTION

BROAD SOCIAL ISSUES - TENSIONS, ELITE

LEGAL AND REGULATORY ENVIRONMENT

CHANGES IN CAPITAL MARKETS, INSTRUMENTS, INSTITUTIONS

TECHNOLOGICAL CHANGE

MARKET CHANGES - CUSTOMERS, COMPETITORS ETC.

IMPORTANT VARIABLES IN THE INTERNATIONAL SYSTEM

LEAD TO WHICH NECESSITATE MONITORING OF

FIG. 1. THE INTERNATIONAL VARIABLES
illustration and has no pretentions of being exhaustive.

NEED AND RELEVANCE OF THE STUDY

"Instantaneous communication, rapid transportation, increasing complexity of industrial production and growing pressures towards specialization combine to push irresistibly in the direction of making all business international in character" (Robinson). It is perhaps no longer possible for any firm of any size to isolate itself completely from the rest of the world. The process of global development is inexorably making international business crucial both for the firm at the micro level and for nation states at the macro level. This process of internationalization has inherent in it both grave threats and exciting opportunities. Both the threats and the opportunities are communicated by the environment to the firm through a complex system of signals. The effectiveness of any organization in exploiting the opportunities and in overcoming the threats lies in its ability to collect and interpret those signals. To this extent, a study on how international firms collect their external information is not merely relevant; it is perhaps vital in understanding an extremely important dimension of modern business. The stage is perhaps not yet set for arriving at prescriptive conclusions but the time is ripe for an effort to understand what it is -- hopefully as a first small step in identifying what it should be.

OBJECTIVE AND SCOPE OF THE STUDY

This study, the objectives of which are more fully explained below, was in essence a pilot-project to prepare the ground for the larger and
full-scale study that the subject obviously deserves.

This pilot-study, tailored to suit the limited time frame of a Master's Thesis, had the very modest objective of providing a set of current bench-mark data on the relative importance of factors and sources for gathering international business information. Most of the earlier studies in this field are over a decade old and the need was felt to conduct a new broadly based survey to identify any major changes before launching the full-scale effort.

While the empirical part of the study is essentially limited and narrow, an effort has been made to lay down a broad conceptual framework on the process of corporate intelligence gathering. A detailed review of available literature has been made in establishing this framework. The field study was designed to test this framework and to indicate directions for possible alteration/modification of the framework to represent more accurately the actual process of scanning as used by U.S. corporations and managers in the field of international business.
ENVIRONMENT, ORGANIZATION AND INFORMATION NEEDS

THE INTELLIGENCE CYCLE

The process of information management can be viewed in terms of the intelligence cycle (Fig. 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 or gathering the information. The process involves identification of factors on which information is to be ob-
tained, the sources and the method of collection. The collected information then needs to be processed and analyzed before it is ready for dissemination and final use. The use, in turn, determines the further information needs and feeds back into the cycle.

Most of the attention of researchers has hitherto been restricted to the processing, analysis, dissemination and use of information. In fact a vast array of tools and techniques have been assembled in the fields of information science, MIS, DSS as well as in strategic planning, control systems and decision theory to assist managers through these stages. The first two stages, that of determining needs and that of actual collection or acquisition of information, unfortunately, have been largely ignored despite the fact that a decision can be no better than the information on which it is based which, in turn, can be no better than the quality of information input to the process (Montgomery and Weinberg).

The focus of this study is on the collection of information. The process of collection, however, is directly determined by the identification of information needs. Our conceptual framework on the information acquisition process must therefore also consider the process of determination of information needs.

INTERACTIONS BETWEEN THE ORGANIZATION AND ITS ENVIRONMENT

The open system approach has recently come to dominate the field of organizational studies. Conceptually, the approach attempts to relate the various parts of the organization to the whole and the whole to the rest of the environment visualizing the organization and its parts to be in a dynamic state of interactions within themselves and
with the environment.

Managing an open-system needs an understanding of these interactions and interdependencies. A useful way to model the approach has been proposed by Emory and Trist and is shown in Fig. 3. The matrix represents the interactions between the organization and the environment with $L_{11}$ representing interactions within the organization, $L_{21}$ and $L_{12}$ representing connections and flows between the organization and the environment and $L_{22}$ representing the processes and interdependencies within the environment itself.

<table>
<thead>
<tr>
<th>OUTPUT</th>
<th>ORGANIZATION</th>
<th>ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>INPUT</td>
<td>$L_{11}$</td>
<td>$L_{12}$</td>
</tr>
<tr>
<td></td>
<td>$L_{21}$</td>
<td>$L_{22}$</td>
</tr>
</tbody>
</table>

**FIG. 3. ENVIRONMENT ORGANIZATION INTERACTION SYSTEM**

The primary interactions between the organization and the environment takes place through the exchange of information or energy. The environment provides both the resources and the opportunities for the organizations' survival and growth. The key to success lies in spotting the environmental cues and in responding with the appropriate response. In this view of the organizational process, the system of identifying, interpreting and responding to the environmental cues becomes the core of strategy and obtaining, analyzing and acting on environmental information become the most crucial of managerial functions.

Information management, hitherto, has been largely preoccupied
with $L_{11}$. Very limited attention has been paid to $L_{21}$ and $L_{12}$ and $L_{22}$ has been entirely ignored.

**INFORMATION NEEDS**

The identification of information needs and priorities largely directs the process of information collection. The needs are, to a considerable extent, functions of the given organizational situation -- the management philosophy and style, the nature of the organization's activities and the attitudes and backgrounds of the managers. It is difficult, therefore, to generalize the analysis of information needs. However for the purpose of our framework, a simple matrix combining the paradigms of business and military organizations may be useful (Fig. 4).

<table>
<thead>
<tr>
<th>TYPES OF INFORMATION</th>
<th>DEGREE OF RELEVANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AREA OF INFLUENCE</td>
</tr>
<tr>
<td></td>
<td>IMMEDIATE ZONE</td>
</tr>
<tr>
<td></td>
<td>AREA OF INTEREST</td>
</tr>
<tr>
<td>DEFENSIVE INFORMATION</td>
<td></td>
</tr>
<tr>
<td>PASSIVE INFORMATION</td>
<td></td>
</tr>
<tr>
<td>OFFENSIVE INFORMATION</td>
<td></td>
</tr>
</tbody>
</table>

**FIG. 4. CLASSIFICATION OF INFORMATION NEEDS**

The classification on the basis of type of information utilizes the terminology developed in the field of Strategic Information Systems (SIS). Defensive information is oriented towards avoiding surprises. A firm operates on the basis of a set of assumptions and defensive in-
formation is required primarily to provide advance warning in case environmental changes cause a need to change some of the assumptions. They are largely directed to identifying threats.

Passive information does not have a strategic bearing; these are bench-mark data that are regularly collected for operational purposes. Offensive information, probably the most crucial from a strategic point of view, is directed towards identification of opportunities.

Depending on the orientation of the organization, the same piece of information can be treated as defensive, passive or offensive. But it would stand to reason that, for any item of information, the effectiveness of the organization in utilizing the information would depend on what kind the information is perceived to be.

The "degree of relevance" classification uses a well established military paradigm. Areas of influence are the product/markets in which the organization currently operates. The immediate zone represents areas of activity which are on the periphery of the firm's current activities and the area of interest is the broader area that the company is concerned with in the long term but which has little immediate impact on the company's activities.

Historically, business organizations have largely focused their information collection only on the areas of influence and, within this area, largely on defensive and passive information. Strategic planning brought into focus the importance of offensive information as well as the need for monitoring the immediate area and the area of interest. Myopic obsession with the area of influence has probably been one of the more important causes of corporate downfall. Most large organizations today realize this implication and have formal or informal processes for
monitoring almost all the slots in the matrix.

Since the overall management processes for domestic and international management are similar, the information needs too are broadly similar. The distinction lies in the problems, expenses and delays in collecting and interpreting information on the international arena. The nature of international business diffuses the boundaries between the areas of influence, the immediate areas and the areas of interest and considerably expand the need for monitoring the latter areas. Cultural and physical distances reduce the strengths of signals both for defensive and offensive information and this requires installation of a more sensitive and alert monitoring system.

Aguilar provides another interesting framework for visualizing the problems of an individual manager with regard to information needs (Fig. 5). A manager receives a vast amount of information, on a continuous basis. Box 1 represents the information a manager receives.

![Diagram]

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

FIG. 5. INFORMATION WANTS, NEED AND AVAILABILITY
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 the manager needs. He does not receive all the information he needs. He does not even want all the information he needs. There can also be information he receives, needs but does not want.

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. Our empirical study will be concerned largely with the methods and systems for collection of information. Such systems will normally be biased by what information the managers want and may not represent the actual information needs.
UNDERSTANDING THE SCANNING PROCESS

HISTORICAL DEVELOPMENTS

Corporate and academic interest in environmental scanning has been a by-product of the emphasis on strategic planning that has swept through the field of business management over the last two decades. Strategic planning emerged in recognition of the enormous influence of environmental factors on the success or even survival of corporations. Scanning was conceived as the method of obtaining and interpreting the environmental signals as a basic input to strategy formulation and decision making.

Academic and research interest in scanning has waxed and waned over the last fifteen years. There has been a close linkage between academic research on the scanning process and environmental shocks suffered by U.S. corporations. Thus, there was a burst of research activity in the field in the late 1960's followed by a lull in the early 1970's. Research interest was revived in the mid 1970's but again almost as a passing fancy that lasted only till U.S. business swung back to the path of recovery. From the late 1970's, consistent with this past pattern, scanning has captured research attention once again.

THE THREE MODELS OF SCANNING

Over this period, three distinctly separate conceptual models of the scanning process have emerged. The first, evolved by Aguilar, conceives of scanning as a micro-process, carried out by individual managers in response to their own information needs. The second, developed
out of the work of Terry, King, Thomas and others views scanning as an organizational process -- as a subsystem of the strategic planning system adopted by the organization. The third model has evolved out of the work of Kalff which perceives scanning as an inter-organizational process of detection, screening and analysis of 'issues' that are conceived as important and capable of affecting organizational performance.

These three scanning models are described in greater detail in the next two sections.
THE MICRO VIEW OF SCANNING

THE PROCESS OF INFORMATION ACQUISITION

Aguilar was perhaps the first researcher to conceptualize the scanning process. He viewed scanning as an activity indulged in by managers in an organization trying to fulfill their need for external information. In this scheme, the process of information acquisition can be viewed in terms of three major constituents:

1. What information is acquired (the factors)
2. From whom is information acquired (the sources)
3. How is information acquired (the manner and mode)

THE FACTORS

The factors provide a classification of what information is collected. For the purpose of analysis and understanding, it is necessary to group or classify the various kinds of information collected by organizations in a few but distinct categories. The norms for adopting any system of classification are (Keegan):

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 the actual scanning practice.

Past researchers have used various classification systems and
Fig. 6 tabulates the classifications used by Aguilar, Keegan and Kefalas. Despite the apparent similarity at first sight, the systems are indeed considerably different and this makes it difficult to compare their data and findings.

<table>
<thead>
<tr>
<th>CLASSIFICATION ADOPTED BY AGUILAR</th>
<th>CLASSIFICATION ADOPTED BY KEEGAN</th>
<th>CLASSIFICATION ADOPTED BY KEFALAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. MARKET TIDINGS</td>
<td>1. MARKETING INFORMATION</td>
<td>1. MARKETING FACTORS</td>
</tr>
<tr>
<td>2. TECHNICAL TIDINGS</td>
<td>2. PRESCRIPTIVE INFORMATION</td>
<td>2. TECHNOLOGY FACTORS</td>
</tr>
<tr>
<td>3. BROAD ISSUES</td>
<td>3. RESOURCE INFORMATION</td>
<td>3. EXTERNAL GROWTH FACTORS</td>
</tr>
<tr>
<td>4. ACQUISITION LEADS</td>
<td>4. GENERAL CONDITIONS</td>
<td>4. GOVERNMENT FACTORS</td>
</tr>
<tr>
<td>5. OTHER TIDINGS</td>
<td>5. OTHER INFORMATION</td>
<td>5. OTHER FACTORS</td>
</tr>
</tbody>
</table>

**FIG. 6.** DIFFERENT CLASSIFICATION SCHEME FOR INFORMATION FACTORS

Under the category of 'market tidings', Aguilar included market potential, market structure, competitors and industry, pricing, sales negotiations and customers. While considering the same items in his classification or 'marketing information', Keegan further subdivided this category into two parts -- marketing-competitive and marketing-general with general information on potential, channels, consumer attitudes and behavior etc. being included in the general part and all competition oriented information being included in the first subclass.
Keegan used the class 'prescriptive information' to include information on all aspects of what he calls 'rules of the game'. Included were all prescriptions affecting the organization -- from 'helpful guidelines' to decisions of administrative tribunals and law decrees. Similarly, in the category 'resource information' were included all aspects regarding the availability of resources -- money, manpower, raw materials, components as well as potential candidates for acquisition, merger or joint ventures.

These differences in the classification system must be viewed against the fact that while Aguilar and Kefalas were investigating the overall process of environmental scanning, only the Keegan study refers specifically to scanning of the international environment.

THE SOURCES

While consistent on the overall conceptual implications, the classification of sources in the existing studies differ considerably in the details. Aguilar classifies them as outside and inside sources and, within these categories, he considers personal and impersonal sources separately. Kefalas, while staying with the inside/outside classification, considers the sub-classification on the basis of human (largely the same as personal for Aguilar), documentary and combination (mostly meetings). Keegan also classifies the sources in terms of human, documentary and physical phenomena (objects, events and circumstances).

One dimension that seems to have been overlooked in past research is the verbal/written distinction. Keegan does make this distinction
in his statistical analysis but, in the conceptual framework, this basis of distinction does not seem to have been made. Learning theory, however, does present strong evidence that this basis of classification can be important and the Keegan data too supports the premise that verbal/written is, in fact, a crucial dimension in the analysis of sources.

![Diagram of classification of sources]

**FIG. 7. CLASSIFICATION OF SOURCES**

**THE WAYS**

The ways of collecting information can be further divided into two parts -- the modes and the manner.

Aguilar classified the modes as undirected viewing, conditioned viewing, informal search and formal search in an ascending order of
specificity of the information and the extent of structure built into the viewing process. Both Keegan and Kefalas adopted the same classification but called the modes viewing, monitoring, investigation and research. Each of the modes were defined as under:

VIEWING: Viewing is defined as keeping in touch with the environment through oriented exposure to information which might be relevant to a person's job or organization. This mode is more focused than random or even general curiosity but less focused 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: Focused attention not involving active search, to a more or less clearly defined information subject agenda or information sources. The agenda undergoes constant change but, at any point of time, it exists and can be enumerated.

INVESTIGATION: Investigation is a relatively limited and informal system of seeking out specific information. It involves an active seeking out as contrasted with the more passive watching over of the surveillance orientation of monitoring.

RESEARCH: A formally organized effort to acquire specific in-
formation, usually for a specific purpose. Research is typically an effort to answer a formulated question with a definite beginning and end.

**FIG. 8. THE MODES OF ACQUIRING EXTERNAL INFORMATION**

The manner of information collection is differentiated in terms of solicited and unsolicited information. Aguilar further subdivided solicited information between explicitly solicited and organizationally solicited and unsolicited information between directed and undirected categories.
VALIDATING THE MODEL

This model of the scanning process derives considerable support from the empirical studies of Aguilar, Keegan, Kefalas and Coleman. While the results will be discussed in a later section, their surveys seemed to indicate that these indeed were the various factors, sources and ways by which individual managers collected external information. This model was essentially a hypothesis generated by the surveys conducted by Aguilar in the late 1960's and the subsequent work of the other researchers largely followed this model. The different studies arrived at different results with regard to the relative importance of the various factors, sources, means and modes of collecting information but they all supported the underlying assumption that this framework of classification in terms of factors, sources and ways truly captured the actual process of scanning as practiced by corporate managers. To the best of our knowledge, there has been no systematic evaluation if managers do indeed differentiate between the factors and sources or whether they do actually conduct scanning with the systematic continuity that the model suggests. Further, the model implies a fragmented approach to scanning with each manager finding information that he needs from sources that he has access to. The model does not provide for any explicit organizational system for scanning. While this may indeed be true, the studies, by themselves, do not specifically attempt to consider and support this implication.
SCANNING AS AN ORGANIZATIONAL FUNCTION

A MACRO VIEW OF SCANNING

As discussed in the previous section, environmental scanning was originally conceptualized in the late 1960's as the process of an individual manager collecting information required by him from sources to which he has an access. This view of scanning can be described as an atomistic or micro level view that looked at scanning at the smallest possible level of analysis -- that of the individual manager. Literature in the field of environmental scanning up to the mid 1970's seems to be entirely dominated by this micro view.

From the late 1970's, however, the need was felt to conceptualize scanning as an organizational activity. To quote Thomas,

When there are a number of individuals engaged in environmental scanning for corporate planning on an ongoing basis in a more or less formalized way, then a macro-view is required to conceptualize the resulting large scale institution-wide scanning capability.

A useful macro view of the scanning system has been developed by Fahey, King and Narayanan. Their conceptual typology of environmental scanning and forecasting systems (ESFS) is shown in Fig. 9. The typology characterizes scanning and forecasting as regular, periodic or continuous in increasing order of sophistication and complexity. The row labels in the figure show some of the selected dimensions that are useful in distinguishing among the three categories.

Irregular systems respond to environmentally generated crisis and focus on specific short term problems. These systems attempt to reduce
<table>
<thead>
<tr>
<th></th>
<th>IRREGULAR</th>
<th>PERIODIC</th>
<th>CONTINUOUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Impetus for</td>
<td>crisis-initiated</td>
<td>problem-solving/issue oriented</td>
<td>opportunity finding and problem avoidance</td>
</tr>
<tr>
<td>scanning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Scope of scanning</td>
<td>specific events</td>
<td>selected events</td>
<td>broad range of environmental systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Temporal nature</td>
<td>reactive</td>
<td>proactive</td>
<td>proactive</td>
</tr>
<tr>
<td>(a) time frame of data</td>
<td>retrospective</td>
<td>current and retrospective</td>
<td>current and retrospective</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) time frame for</td>
<td>current and near-term future</td>
<td>near term</td>
<td>long term</td>
</tr>
<tr>
<td>decision impact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Types of forecasts</td>
<td>budget-oriented</td>
<td>economic and sales oriented</td>
<td>marketing, social, legal, regulatory, cultural etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Media for</td>
<td>ad-hoc studies</td>
<td>periodically updated studies</td>
<td>structured data collection and processing systems</td>
</tr>
<tr>
<td>scanning and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>forecasting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Organization</td>
<td>i) ad-hoc teams</td>
<td>various staff agencies</td>
<td>scanning unit, focus on enhancing uncertainty handling</td>
</tr>
<tr>
<td>structure</td>
<td>ii) focus on</td>
<td></td>
<td>capability</td>
</tr>
<tr>
<td></td>
<td>reduction of</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>perceived</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>uncertainty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Resource allocation</td>
<td>not specific</td>
<td>specific and continuous but</td>
<td>specific, continuous and substantial</td>
</tr>
<tr>
<td></td>
<td></td>
<td>relatively low</td>
<td></td>
</tr>
<tr>
<td>8. Methodological</td>
<td>simplistic data</td>
<td>statistical forecasting</td>
<td>many 'futuristic' forecasting methodologies</td>
</tr>
<tr>
<td>sophistication</td>
<td>analysis and</td>
<td>oriented</td>
<td></td>
</tr>
<tr>
<td></td>
<td>budgetary projection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. 'Cultural'</td>
<td>not integrated</td>
<td>partially integrated as a</td>
<td>fully integrated as crucial for long range growth</td>
</tr>
<tr>
<td>orientation</td>
<td>into mainstream of</td>
<td>stepchild</td>
<td></td>
</tr>
<tr>
<td></td>
<td>activity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FIG. 9. AN ORGANIZATIONAL VIEW OF SCANNING
uncertainty in the current and near term future environment and they are rarely able to detect opportunities or identify radically new solutions to problems. Organizations adopting irregular systems usually do not have a strategic planning culture.

Periodic systems are usually more sophisticated and complex. While problem solving in focus, they exhibit more proactive characteristics. They are forecasting oriented but limited in scope and methodologies. In general, organizations having periodic scanning systems tend to view them as 'necessary evils'.

Continuous systems, on the other hand, focus on opportunity finding rather than problem solving. They are extensive systems that attempt to enhance the organization's capability to handle environmental uncertainty rather than to reduce perceived uncertainty.

The continuous category is further analyzed by Thomas in terms of the space and time dimensions. Within the time dimension, he distinguishes between continuity over multiple periods which he calls 'permanence' and continuity in the sense of sequencing the multiphased scanning activity within the corporate planning cycle which he calls 'periodicity' or cyclicality. He also distinguishes 'pervasiveness' of scanning, in terms of the space dimension, in two categories -- multi-level activity (i.e., vertical participation in the scanning function) and multi-unit activity (horizontal proliferation).

INTEGRATING SCANNING WITH CORPORATE OPERATIONS

The process of integrating environmental scanning with corporate operations has been represented by Terry as shown in Fig. 10.
Terry distinguishes between corporate and functional environmental scanning. The scanning process may be initiated at the corporate level and strategic issues may be fed down to the functions. Scanning by functions can then take place from which tactical key issues can be derived. On the other hand, functions may scan their environment and feed this information into the corporate scan.

The second stage of the scan is a review of the corporate mission or task which can be radically altered by what is discovered in the scan. The strategic key issues may similarly need some adjustment.

FIG. 10. INTEGRATING SCANNING WITH CORPORATE OPERATIONS
The third stage is the development of strategic and tactical objectives and, through a dialogue between corporate level and functional management, an operational plan is developed. Results from operation of the plan feed back into the planning process improving the system with each cycle.

AN INTERORGANIZATIONAL APPROACH TO SCANNING

A very different conceptual framework of the organizational scanning activity has been developed by Kalff based on the emerging concept of organizational force-fields. Not only is this framework totally different from the 'atomistic' view of scanning, it is also distinct from the macro-view because of its inter-organizational approach.

A starting point of Kalff's analysis is the concept of organizational performance variable defined by Ackoff. The performance variable is a function of a set of controllable, partially controllable and uncontrollable variables. More specifically

\[ P = f(C, U_i, U_j) \]

where

- \( P \) is the performance variable
- \( C \) are the controlled variables
- \( U_i \) are the partially controlled variables
- \( U_j \) are the uncontrollable variables

Kalff considers the unit of analysis for the scanning process to be an 'issue' and he defines an issue as an "interorganizational problem where at least one of the clusters of corporate performance variable is at stake because of the involvement of at least one organiza-
tion that is an element of the forcefield to which the cluster of performance variables is linked." Essentially, he uses the concept of an 'organizational society' to narrow down the field of scanning to inter-organizational processes.

The objectives of scanning are defined by Kalff as

1. To allow early detection of emerging issues
2. To screen as many potentially relevant issues as possible, and
3. To make in-depth analysis and study of issues that are of crucial importance.

Kalff makes a distinction between preactive and interactive scanning. Using the two archetypes of corporate planning modelled by Ackoff, he views preactive scanning as having a short-term focus with collection of data restricted to external phenomenon that affect corporate performance directly. Interactive scanning, on the other hand, supports long-term strategic planning and involves collection of data which are "relevant for all crucial organizational functions, not just the commercial and transformation functions." Conceptually, this distinction is similar to the approach of Terry and King in differentiating between irregular, periodic and continuous scanning.

Based on this framework, Kalff has developed his issue-based model of the scanning system (Fig. 11).
FIG. 11. AN ISSUE-BASED VIEW OF SCANNING
THE CONCEPTUAL FRAMEWORK

INTEGRATING THE MICRO AND MACRO VIEWS

The micro-view of scanning looks at the final process of information collection as a function carried out by an individual manager in the organization. In effect all studies modelled on the micro-view either tried to hold the organizational variables as constant (Aguilar) or to analyze their results in terms of a few organizational variables like size of the company (Aguilar, Keegan) or the stability of its environment (Kefalas).

The macro-view of scanning, on the other hand, perceives scanning as entirely an organizational process linked to its planning system. It provides no role for individual differences among managers in determining their scanning behavior.

Collection of 'information' is ultimately a human process. Whether collected directly as 'information' from the external environment or converted from 'raw data' available within the organization, it is managers who collect, interpret and act on information. Looking at scanning as a process of collecting information as different from acquiring data, there is a strong justification for feeling that the managers' attributes, perceptions and environmental sensitivities will affect the process of environmental scanning.

Similarly, with most corporations adopting a formal system of strategic planning, there are reasons to believe that organizations attempt to structure the scanning system and individual managers coordinate their scanning activity within the overall framework laid down
by the organization. In other words, characteristics of the organization can be expected to play an important role in determining the scanning behavior of individual managers.

The organizational model of scanning implies that the strategic planning system of the organization influences its scanning process. The strategic planning system of organizations vary widely and it is not possible to lay down any general framework for the scanning system on this basis.

However, it appears that some organizational variables tend to influence its strategic planning system and thus affect the scanning process adopted. Whether this is true is a matter of debate and empirical investigation. But it can probably be hypothesized that ultimately variables like the size of an organization, its competitive environment, the level of technology in its product and processes etc. may have significant and systematic impact on the extent and nature of strategic planning adopted by the organization.

Based on this hypothesis, it is possible to combine the micro and macro view of scanning into an integrated framework with a selected set of organization and manager variables collectively determining the final process of scanning adopted by each manager. Our conceptual framework of scanning is such an attempt to integrate these two views with certain changes based on our personal perceptions.

THE CONCEPTUAL MODEL

Fig. 12 is a schematic view of our conceptual model of the scanning process. We have incorporated only a few of the organization and man-
ager variables that, to our mind, have a significant impact on the scanning system. These variables are:

**organization variables**

1. size of the organization
2. level of technology in its products and processes
3. level of internationalization (for the specific aspect of multinational scanning)
4. rate of growth in industry and organization
5. nature of its products -- goods or services
6. national origin of company (to represent the socio-cultural variables)

**manager variables**

1. level in organizational hierarchy
2. functional specialization
3. level of authority -- line or staff
4. experience with the organization
5. experience in the function
6. age

We have also adopted a modified system for defining the factors and categorizing the sources. We have classified the factors as under:

**market factors**: market potential, market structure, competition, distribution channels, prices

**financial factors**: capital markets, interest rates, taxation, incentives

**legal and regulatory**: ownership rules, repatriation controls, factors

**technology factors**: new products, processes, costs, availability of raw materials and other inputs
FIG. 12. THE PROCESS OF COLLECTING INTERNATIONAL INTELLIGENCE

ORGANIZATIONAL VARIABLES

- SIZE
- PRODUCT
- TECHNOLOGY
- ORIGIN
- LEVEL OF INTERNATIONALIZATION
- GROWTH

MANAGER VARIABLES

- FUNCTIONAL SPECIALIZATION
- AUTHORITY
- EXPERIENCE
- AGE

THE PROCESS OF COLLECTING INTERNATIONAL INFORMATION

FACTORS

- MARKET
- TECHNICAL
- FINANCIAL
- LEGAL/REGULATORY
- POLITICAL/SOCIAL/ECONOMIC
- BROAD ISSUES

ORAL

INTERNAL

EXTERNAL

EXPERIENTIAL/VISUAL

WAYS

- MANNERS
- UNSOLICITED
- SOLICITED
- SURVEILLANCE
- VIEWING
- MONITORING

MODES

SURVEILLANCE

SEARCH

INVESTIGATION

RESEARCH
broad issues: political stability and risk, social norms
and customs, cultural factors

Our definition of factors was targeted to suit the specific re-
requirement of our study on multinational scanning. Thus, certain issues
not particularly relevant or important for a purely domestic business
were incorporated because of their greater importance for international
firms scanning the environment on a global basis.

Similar, we classified sources into three categories depending on
the method of communication, viz, oral, written and experiential. Each
individual source can communicate information through one or more of
these channels as shown in the diagram.

THE QUESTION OF 'ISSUES' VS. FACTORS

Our conceptual model is broadly based on the Aguilar classifica-
tion of sources, factors, manners and modes of information acquisition.
We have explicitly incorporated the organization variables and have
also redefined and reclassified some of the factors and sources based
on results of past research and also our own perceptions.

On the question of sources and ways, there is no apparent con-
lict between the three models of the scanning process discussed in the
last two sections. Whatever be the system for defining information
needs, all external information has to be ultimately collected from
some source and in certain ways. Thus, the classification in terms of
sources, manners and modes is noncontroversial and is consistent with
all the views of the scanning process.

The categorization in terms of 'factors', however, is inconsistent
with the issue-oriented scanning conceptualized by Kalff. As mentioned earlier in the review of the micro model, there is no evidence that managers actually distinguish between the factors. If indeed they scan based on 'issues' deemed to be important, they will look for all relevant information on the issue and it would be the 'issue' rather than the 'factor' that should be our unit of analysis.

This question we leave for our field survey. One of the objectives of our empirical study is to analyze the data in terms of the variances and to determine if the classification system truly represents the mental model of managers. If it does, we should expect to see clear distinctions among the factors in terms of their perceived importance along with a pattern of influences of the organization and manager variables on the relative importance of the different factors. If these distinctions and patterns are not observed, we may have to reconsider the appropriateness of this classification.

THE EMPirical SURVEY

In the conceptual model, we have identified a large number of variables and causal relationships that can affect the scanning process. In the empirical study, we have limited our attention only to a few of the variables and processes. This was necessitated by the constraints on time and effort imposed by the limited scope of a Master's Thesis and by the constraints of the questionnaire format. We do not expect our field survey to be extensive enough to draw definitive conclusions regarding the effect of the various variables. We have also not attempted to study the modes and manner of information collection except to the
extent of the means of communication. In the empirical study, we have only looked at the factors and sources as defined by us and have attempted to observe the influence of a few selected organization and manager variables on the relative importance of the factors and usage of the sources. Any conclusions that we draw would be subject to reservations due to the limited sample size, the possible effects of unexplored variables and the possible sources of complex multi-variate influences that the study was not designed to identify. On the other hand, however, we do expect the field study to throw some light on the more important influences and also on the fundamental appropriateness of our classification system.
RESULTS OF PREVIOUS STUDIES

PREVIOUS SURVEYS

Aguilar, in justifying the need for his study on environmental scanning, lamented 'the generally meager and spotty attention management literature has given to scanning'. Cyert and March emphasized the same theme—'we need more reliable information on where and how organizations secure information ...'. Unfortunately, the pleadings seem to have had limited effect and the available data on the field of information collection remains hopelessly inadequate.

In summarizing the results of past research, we shall consider the works of Aguilar, Kefalas and Keegan. The first two have studied the process of organizations acquiring external information; the last study specifically refers to multinational scanning. While we shall be comparing the quantitative results, this distinction needs to be kept in view.

RELATIVE IMPORTANCE OF FACTORS

Aguilar and Keegan obtained direct information on the managers' perception of relative importance of the various factors. Kefalas, on the other hand, studied the proportion of scanning time devoted to the various factors. For the purpose of comparison, we shall make the simplifying assumption that managers distribute their scanning time among the factors in proportion to their perceived importance. The assumption may not hold in a strict sense but would permit highlighting any major variation between the results.
All the studies identified market factors as the category that managers consider most important. However, the study results vary considerably on the question of the relative importance of marketing vis-à-vis the other factors. For the overall sample, Aguilar found market factors accounting for 58% of responses with all the other factors, jointly, sharing only 42%. Technical factors, second on the list of importance in the Aguilar results, had only 18% responses, i.e., less than a third of the importance placed on market factors. Neither of the other studies found market factors to dominate quite as much. In

<table>
<thead>
<tr>
<th>AGUILAR RESULTS FACTORS</th>
<th>RELATIVE IMPORTANCE</th>
<th>KEFALAS RESULTS FACTORS</th>
<th>RELATIVE IMPORTANCE</th>
<th>KEEGAN RESULTS FACTORS</th>
<th>RELATIVE IMPORTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARKET TIDINGS</td>
<td>58%</td>
<td>MARKET FACTORS</td>
<td>33.3%</td>
<td>MARKET INFO</td>
<td>37%</td>
</tr>
<tr>
<td>TECHNICAL TIDINGS</td>
<td>18%</td>
<td>TECHNOLOGY FACTORS</td>
<td>25.0%</td>
<td>PRESCRIPTIVE INFO</td>
<td>27%</td>
</tr>
<tr>
<td>BROAD ISSUES</td>
<td>8%</td>
<td>EXTERNAL GROWTH</td>
<td>6.9%</td>
<td>RESOURCE INFO</td>
<td>16%</td>
</tr>
<tr>
<td>ACQUISITION LEADS</td>
<td>7%</td>
<td>GOVERNMENT FAC.</td>
<td>12.6%</td>
<td>GENERAL CONDITIONS</td>
<td>15%</td>
</tr>
<tr>
<td>OTHER TIDINGS</td>
<td>9%</td>
<td>OTHERS</td>
<td>22.2%</td>
<td>OTHER INFO</td>
<td>5%</td>
</tr>
<tr>
<td>TOTAL PERCENT</td>
<td>100%</td>
<td>TOTAL PERCENT</td>
<td>100.0%</td>
<td>TOTAL PERCENT</td>
<td>100%</td>
</tr>
</tbody>
</table>

FIG. 13. RELATIVE IMPORTANCE OF FACTORS - A COMPARATIVE REVIEW OF PAST RESULTS

the Kefalas study, market factors accounted for 33.3% of responses with technology factors following closely with 25%. In fact, for industries
in the 'dynamic' environment, market factors accounted for 35% responses with technology factors accounting for 30%. The Keegan study did not consider technology factors independently but even in this study, the relative dominance of market factors is far less than the Aguilar results.

Aguilar also found market tidings to dominate the information acquisition process irrespective of the manager's functional specialization or level in the hierarchy. The other two studies do not support this conclusion. For managers in the general management area, the Keegan study found marketing to be relatively unimportant accounting for only 17% of responses while prescriptive, resource and general factors accounted for 29%, 27% and 27% respectively. This contrasts sharply with the Aguilar results of 55% responses for general managers referring to market tidings with technology, broad issues, acquisition leads and other tidings accounting for 14%, 7%, 12% and 12% of responses respectively. Similar deviations are found in the study results with regard to the hierarchical level variable. Keegan found that top managers consider prescriptive information to be most important (33%) with general information (29%), resource information (21%) and market information (17%) following behind in that order. Both Aguilar and Kefalas found top managers indicating a far larger relative importance for the market factors.

These significant differences suggest that managers in U.S. firms consider market factors to be extremely important for their domestic operations, but not as important for their international operations. This is indeed an interesting hypothesis and it suggests the need for a
fresh enquiry to test this hypothesis.

**RELATIVE USAGE OF SOURCES**

The results of Aguilar and Keegan are fairly consistent with regard to the relative usage of different sources. The Kefalas results are entirely different.

Kefalas found meetings to be the most used source for external information. Aguilar and Keegan found meetings to be the least used (2% and 1% respectively of all sources). Both Aguilar and Keegan found human sources the most used (81% and 67% of all sources) while Kefalas found this source to be the least used. The study methodologies provide no clues to explain these dramatic differences.

Aguilar found outside sources to be more important than inside sources (55% to 45%). Keegan also came to the same conclusion (66% to 34%). Aguilar found customers and suppliers accounting for 14% of all source usage while Keegan found them contributing only 5%. Publications were found to be far more important in the Aguilar study (19%) compared to the Keegan study (10%).

Similar inconsistencies are found between the past survey results when the usage of sources is considered separately for the manager's functional specialization and level of responsibility.

One cannot, therefore, escape the conclusion that past surveys do not indicate any uniform pattern with regard to usage of various sources. All these studies basically attempted to hold the organizational variables as constants and studied the influence of the manager variables. The inconsistent results can be interpreted to mean that the effect of
the organization variables (national origin, size, level of internationalization, technology etc.) are far more pronounced, particularly on the usage of sources, compared to the manager variables.

The Keegan study also arrived at a very interesting conclusion regarding the effect of research methodology and survey instrument on the survey results. He found that the results regarding usage of sources varies widely between a questionnaire survey and a survey based on field interviews (Fig. 14). There seems to be a wide gulf between the sources actually used and the sources managers think they use. The results of the questionnaire survey reflect what the managers think they use while the interviews based on the instance recall technique identify the sources they actually use. It would appear that respondents rely more than they realize upon 1) sources outside their company and 2) human sources and less than they realized upon 1) sources inside the company and 2) documentary sources.

<table>
<thead>
<tr>
<th>USAGE OF SOURCE</th>
<th>SURVEY FINDINGS (%)</th>
<th>QUESTIONNAIRE FINDINGS (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOURCE LOCATION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---INSIDE</td>
<td>34</td>
<td>65</td>
</tr>
<tr>
<td>---OUTSIDE</td>
<td>66</td>
<td>35</td>
</tr>
<tr>
<td>SOURCE TYPE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---HUMAN</td>
<td>67</td>
<td>55</td>
</tr>
<tr>
<td>---DOCUMENTARY</td>
<td>27</td>
<td>45</td>
</tr>
<tr>
<td>---PHYSICAL PHENOMENON</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

**FIG. 14. IMPORTANCE OF INFORMATION SOURCES - COMPARISON OF QUESTIONNAIRE AND SURVEY FINDINGS (KEEGAN)**
RELATIVE IMPORTANCE OF MANNERS AND MODES

The discrepancies between the past survey results with regard to the usage of sources persists in the relative importance of manners and modes of information acquisition.

Fig. 15 summarizes the three survey results with regard to the manner of acquiring external intelligence. It is again observed that the Aguilar and Keegan results (surveys conducted in the same academic institution around the same period) are highly consistent while the Kefalas results are almost diametrically opposite.

The results on the relative importance of the modes of information acquisition are equally divergent. Aguilar did not study this question

<table>
<thead>
<tr>
<th>MANNER OF INFO ACQUISITION</th>
<th>KEEGAN RESULTS (%)</th>
<th>AGUILAR RESULTS (%)</th>
<th>KEFALAS RESULTS (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOLICITED</td>
<td>45.0</td>
<td>43.0</td>
<td>62.7</td>
</tr>
<tr>
<td>UNSOLICITED</td>
<td>55.0</td>
<td>57.0</td>
<td>37.3</td>
</tr>
</tbody>
</table>

FIG. 15. RELATIVE IMPORTANCE OF MANNERS OF INFORMATION ACQUISITION

and the results of Keegan and Kefalas are shown in Fig. 16. The Kefalas results show almost a uniform distribution over the various modes while Keegan found monitoring to be the predominant mode with relatively insignificant usage of the research mode.

Aguilar also came to the conclusion that most information obtained from inside sources are solicited while most information obtained from
<table>
<thead>
<tr>
<th>RELATIVE IMPORTANCE OF MODES</th>
<th>KEEGAN RESULTS (%)</th>
<th>KEFALAS RESULTS (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SURVEILLANCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-- VIEWING</td>
<td>13.0</td>
<td>23.5</td>
</tr>
<tr>
<td>-- MONITORING</td>
<td>60.0</td>
<td>23.8</td>
</tr>
<tr>
<td>SEARCH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-- INVESTIGATION</td>
<td>23.0</td>
<td>25.9</td>
</tr>
<tr>
<td>-- RESEARCH</td>
<td>4.0</td>
<td>26.8</td>
</tr>
</tbody>
</table>

FIG. 16. RELATIVE IMPORTANCE OF MODES

outside sources are unsolicited. Managers in smaller companies receive little solicited information from outside sources while managers in larger companies obtain progressively increasing percentage of information from outside sources in an unsolicited manner.

Another interesting conclusion arrived at by Aguilar refers to the vertical flow of external intelligence within the organization. Most superiors feel that they get more information from their subordinates than subordinates feel they provide. Similarly, superiors feel they provide much more information to their subordinates than the subordinates feel they receive.

Keegan also made an interesting study of the relative importance of the communication media. In particular, he found that much more information is communicated verbally (81%) compared to the written form (19%). Face to face exchanges were found to be the most important form of communication in the process of information acquisition.
<table>
<thead>
<tr>
<th>COMMUNICATION MEDIUM</th>
<th>RELATIVE USAGE (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. VERBAL</td>
<td></td>
</tr>
<tr>
<td>-- Face to Face</td>
<td>75.0</td>
</tr>
<tr>
<td>-- Telephone</td>
<td>3.5</td>
</tr>
<tr>
<td>-- Talk to Group</td>
<td>2.5</td>
</tr>
<tr>
<td>-- Total Verbal</td>
<td>81.0</td>
</tr>
<tr>
<td>2. WRITTEN</td>
<td></td>
</tr>
<tr>
<td>-- Letters and Memo's</td>
<td>4.5</td>
</tr>
<tr>
<td>-- Reports</td>
<td>3.5</td>
</tr>
<tr>
<td>-- Publications</td>
<td>9.0</td>
</tr>
<tr>
<td>-- Cables</td>
<td>2.0</td>
</tr>
<tr>
<td>-- Total Written</td>
<td>19.0</td>
</tr>
</tbody>
</table>

Grand Total               100.0

FIG. 17. RELATIVE USAGE OF MEDIA
DESIGN OF THE FIELD STUDY

OBJECTIVES OF THE FIELD STUDY

The empirical part of the study had the following objectives:

1. To provide a set of current bench-mark data on the relative importance of various factors and sources of information in the process of environmental scanning adopted by managers in U.S. corporations involved in the field of international business.

2. To study the impact of selected organizational and manager variables on the importance of various factors and sources.

3. To test statistically for the existence of evidence to support the system of categorization into factors and sources as adopted in the conceptual model. Similarly, to test statistically and identify those organizational and manager variables that have a significant impact on the relative importance of the various constituents of the scanning process.

4. To discover if the scanning system undergoes any major change between a steady state activity level and when a sharp change in the activity level is contemplated (e.g., entry/exit or substantial increase/decrease in the business level).

THE RESEARCH INSTRUMENT

Field data was collected through a questionnaire, a copy of which is appended as annexure I. The first 14 questions were aimed at determining the values of the independent variables as per the following classification:
The Independent Variables

Organizational Variables

1. Size of Company
   a) Large (Annual Sales over $500M)
   b) Medium (Annual Sales between $50 and $500M)
   c) Small (Annual Sales less than $50M)

2. Level of Technology
   a) Hi-Tech (Selected Industries like Aerospace, Communication, Computers, Robotics, etc.)
   b) Traditional (Steel, General Chemicals, Building Materials, Standard Engineering Equipment, etc.)

3. Level of Internationalization
   a) Domestic (no Export Dept. with Domestic Executives Filling Export Orders as Required)
   b) Export (Exports Handled through Separate Export Dept.)
   c) International (International Division to Look After all Aspects of International Business)
   d) Multinational (Integrated Multinational Organization and Control System)

Manager Variables

1. Hierarchical Level
   a) Level 1 (Presidents, Exec. VP's, Group/Senior VP's of Medium Firms and VP's of Large Firms)
   b) Level 2 (All VP's except those Assigned to Level 1. Also General Managers and Functional Directors of Medium and Large Firms)
   c) Level 3 (All other Executives)
2. Company Experience
   a) Inexperienced (Total Company Experience less than 3 Years)
   b) Moderately Experienced (Total Company Experience of 3 to 5 Years)
   c) Experienced (Total Company Experience in excess of 5 Years)

3. International Mgt. Experience
   a) Inexperienced (Total Experience of less than 3 Years in Int. Management)
   b) Moderately Experienced (Total Experience of 3-5 Years in Int. Management)
   c) Experienced (Total Experience of More than 5 Years in Int. Management)

Data on the relative importance of factors and sources were obtained through the use of appropriate rating scales. Certain additional questions were set up to collect information for another study planned for the future and also to revalidate and cross-check some of the information provided by the respondents.

**THE SAMPLE**

The questionnaire was mailed to a group of 91 managers, each representing a separate organization.

The organizations were chosen as a convenience sample and there was a degree of arbitrariness in the choice but there was no reason to expect that the method of selection would introduce any significant systematic bias in the sample.

The organizations were selected from the Standard and Poor's 1983 Register of Corporations, directors and executives on the basis of the
following criteria:

1. The organization must be listed in the Register of U.S. exporters. It was assumed that all or most U.S. firms actively engaged in international business feature in this register. This was done to ensure that the organization did have an involvement in international business.

2. Either of the registers provided the name of at least one executive involved in international business (specifically or through the designation, e.g., Vice President - international operations). This ensured that the manager was actively involved in some aspect of international business. This criterion was, however, not necessary for questionnaires mailed to Presidents or Executive Vice Presidents (when only one Executive V.P. was listed in the S & P register).

3. A list of 150 organizations and managers was prepared based on the above norms. The final sample of 91 managers was selected from this list in a manner that tried to ensure that all the values of the independent variables were represented in the sample (e.g., large, medium and small organizations; level 1, level 2 and level 3 managers, etc.).

**IMPLEMENTATION**

The questionnaire, as can be seen from the enclosed copy, clearly indicated the objectives and the sponsor of the study. Confidentiality was assured and all respondents were offered a copy of the final report.

The questionnaires were mailed on March 10, 1983 and filled questionnaires received between March 22 and March 31, 1983 were used for analysis. 5 more filled questionnaires were received after April 1, 1983 but these could not be considered in the analysis due to time constraints.
RESULTS OF THE SURVEY

RESPONSE RATE

A total of 23 filled questionnaires were received up to March 31, 1983 and only these responses could be considered for analysis even though another 5 responses were received after April 1. The response pattern was as under:

<table>
<thead>
<tr>
<th>SIZE OF COMPANY</th>
<th>LEVEL OF TECHNOLOGY</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>Medium</td>
<td>Small</td>
</tr>
</tbody>
</table>

1. No. of Questionnaires Mailed

<table>
<thead>
<tr>
<th></th>
<th>Large</th>
<th>Medium</th>
<th>Small</th>
<th>Hi-Tech</th>
<th>Traditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No. of Questionnaires Mailed</td>
<td>49</td>
<td>21</td>
<td>21</td>
<td>31</td>
<td>60</td>
</tr>
</tbody>
</table>

2. No. of Responses Received

<table>
<thead>
<tr>
<th></th>
<th>Large</th>
<th>Medium</th>
<th>Small</th>
<th>Hi-Tech</th>
<th>Traditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. No. of Responses Received</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>6</td>
<td>17</td>
</tr>
</tbody>
</table>

3. % Responses

<table>
<thead>
<tr>
<th></th>
<th>Large</th>
<th>Medium</th>
<th>Small</th>
<th>Hi-Tech</th>
<th>Traditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. % Responses</td>
<td>14.3</td>
<td>38.1</td>
<td>38.1</td>
<td>19.4</td>
<td>28.3</td>
</tr>
</tbody>
</table>

FIG. 18. RESPONSE RATE

The level of internationalization could not be assessed at the time of mailing the questionnaire and this information was compiled from the responses. Analysis of the responses across the manager variables is not very realistic since in a number of cases the questionnaire was filled by an executive different from the one to whom it was mailed.

It may be noted that including the 5 responses that could not be analyzed, the actual response rate was approximately 31%.
COMPOSITION OF RESPONDENTS

The composition of the responses in terms of the organization and manager variables was as under:

**Organization Variables**

<table>
<thead>
<tr>
<th>SIZE OF THE COMPANY</th>
<th>Large</th>
<th>Medium</th>
<th>Small</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Responses</td>
<td>7</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>% of Total Responses</td>
<td>30.4</td>
<td>34.8</td>
<td>34.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEVEL OF TECHNOLOGY</th>
<th>Hi-Tech</th>
<th>Traditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Responses</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>% of Total Responses</td>
<td>26.1</td>
<td>73.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEVEL OF INTERNATIONALIZATION</th>
<th>Domestic</th>
<th>Export</th>
<th>International</th>
<th>Multinational</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Responses</td>
<td>6</td>
<td>4</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>% of Total Responses</td>
<td>26.1</td>
<td>17.4</td>
<td>39.1</td>
<td>17.4</td>
</tr>
</tbody>
</table>

**Manager Variables**

<table>
<thead>
<tr>
<th>HIERARCHICAL LEVEL OF MANAGER</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Responses</td>
<td>5</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>% of Total Responses</td>
<td>21.7</td>
<td>56.5</td>
<td>21.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXPERIENCE WITH COMPANY</th>
<th>Inexperienced</th>
<th>Moderately Experienced</th>
<th>Experienced</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Responses</td>
<td>5</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>% of Total Responses</td>
<td>21.7</td>
<td>4.3</td>
<td>74.0</td>
</tr>
</tbody>
</table>
INTERNATIONAL MANAGEMENT EXPERIENCE

<table>
<thead>
<tr>
<th></th>
<th>Inexperienced</th>
<th>Moderately Experienced</th>
<th>Experienced</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Respondents</td>
<td>7</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>% of Total Responses</td>
<td>30.5</td>
<td>0</td>
<td>69.5</td>
</tr>
</tbody>
</table>

IMPORTANCE OF FACTORS

The factor importance scores for all respondents were analyzed through a one way variance test. The average scores, standard deviations and the 95% confidence intervals are shown in Fig. 19.

The F ratio of 3.99 (critical F value for $\alpha = 0.05$ is 1.00) establishes that there is significant difference among the factors in terms of their perceived importance in the scanning process. This was, however, due to the much greater importance placed on market factors compared to the other factors. A separate variance test was conducted on the factor scores for the other four factors and the F value of 0.69 indicates that these factors do not significantly differ in importance.

This analysis was further confirmed by carrying out individual Mann-Whitney tests on the factor scores, taken in pairs. The scores for market factor was significantly higher than the scores for all other factors but the scores of the other four factors, taken in pairs over all possible combinations, failed to yield any statistically significant difference.

INFLUENCE OF ORGANIZATION VARIABLES ON FACTOR IMPORTANCE

The relative importance of each factor was analyzed separately for the various organization variables. This was done by segregating factor
### Analysis of Variance

<table>
<thead>
<tr>
<th>DUE TO</th>
<th>DF</th>
<th>SS</th>
<th>MS = SS/DF</th>
<th>F-RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACTOR</td>
<td>4</td>
<td>27.95</td>
<td>6.99</td>
<td>3.99</td>
</tr>
<tr>
<td>ERROR</td>
<td>110</td>
<td>192.78</td>
<td>1.75</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>114</td>
<td>220.73</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Level

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>N</th>
<th>MEAN</th>
<th>ST. DEV.</th>
<th>FACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>C11</td>
<td>23</td>
<td>4.26</td>
<td>1.21</td>
<td>MARKET</td>
</tr>
<tr>
<td>C12</td>
<td>23</td>
<td>3.26</td>
<td>1.25</td>
<td>FINANCIAL</td>
</tr>
<tr>
<td>C13</td>
<td>23</td>
<td>3.17</td>
<td>1.34</td>
<td>LEGAL &amp; REGULATORY</td>
</tr>
<tr>
<td>C14</td>
<td>23</td>
<td>2.87</td>
<td>1.22</td>
<td>TECHNICAL</td>
</tr>
<tr>
<td>C15</td>
<td>23</td>
<td>3.00</td>
<td>1.57</td>
<td>BROAD ISSUES</td>
</tr>
</tbody>
</table>

**POOLED ST. DEV. = 1.32**

**Individual 95 Percent C. I. for Level Means**

<table>
<thead>
<tr>
<th>C11</th>
<th>I<strong><strong><strong><strong><strong><strong>I</strong></strong></strong></strong></strong></strong>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>C12</td>
<td>I<strong><strong><strong><strong><strong><strong>I</strong></strong></strong></strong></strong></strong>I</td>
</tr>
<tr>
<td>C13</td>
<td>I<strong><strong><strong><strong><strong><strong>I</strong></strong></strong></strong></strong></strong>I</td>
</tr>
<tr>
<td>C14</td>
<td>I<strong><strong><strong><strong><strong><strong>I</strong></strong></strong></strong></strong></strong>I</td>
</tr>
<tr>
<td>C15</td>
<td>I<strong><strong><strong><strong><strong><strong>I</strong></strong></strong></strong></strong></strong>I</td>
</tr>
</tbody>
</table>

**2.00  2.50  3.00  3.50  4.00  4.50  5.00**

**Figure 19. Relative Importance of the Various Factors**
scores (e.g., importance of market factor) for each level of the organization variables (e.g., large, medium and small organizations) and testing the scores in pairs against the null hypothesis that the average values of the factor scores, for different values of each organizational variable, were identical. The null hypothesis implied that the concerned organization variable had no influence on the relative importance of the various factors.

This procedure, carried out for all the factors and over each value of all the organization variables, failed to reject the null hypothesis in any one of the tests. This indicates that none of the organization variables has any significant influence on the relative importance of the various factors.

One interesting result of this analysis was that large companies appeared to make a much clearer distinction between the factors (F ratio of variance test was 3.56) compared to medium (F ratio 1.49) and small (F ratio 1.95) firms.

INFLUENCE OF MANAGER VARIABLES ON FACTOR IMPORTANCE

A similar analysis of factor scores over the manager variables indicated that only the manager's level made a statistically significant difference in the relative importance of factors. The other two variables, viz, company experience and international business experience did not seem to have any significant influence.

The manager's level also does not significantly affect the scores of market factors, technical factors and broad issues. All managers, irrespective of level, seem to consider market factor to be most impor-
ANALYSIS OF VARIANCE

<table>
<thead>
<tr>
<th>DUE TO</th>
<th>DF</th>
<th>SS</th>
<th>MS=SS/DF</th>
<th>F-RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACTOR</td>
<td>4</td>
<td>13.20</td>
<td>3.30</td>
<td>2.89</td>
</tr>
<tr>
<td>ERROR</td>
<td>20</td>
<td>22.80</td>
<td>1.14</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>24</td>
<td>36.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LEVEL N MEAN ST. DEV. FACTORS
C31 5 4.20 0.84 MARKET
C32 5 2.40 0.89 FINANCIAL
C33 5 4.20 0.84 LEGAL & REGULATORY
C34 5 2.80 1.10 TECHNICAL
C35 5 3.40 1.52 BROAD ISSUES

POOLED ST. DEV. = 1.07

INDIVIDUAL 95 PERCENT C. I. FOR LEVEL MEANS
(BASED ON POOLED STANDARD DEVIATION)

+-----------------------------------------------+
| C31                                           |
| I**********I**********I                      |
| C32                                           |
| I**********I**********I                      |
| C33                                           |
| I**********I**********I                      |
| C34                                           |
| I**********I**********I                      |
| C35                                           |
| I**********I**********I                      |
+-----------------------------------------------+

0.90 1.80 2.70 3.60 4.50 5.40 6.30

FIG. 20. IMPORTANCE OF FACTORS - LEVEL 1 MANAGERS
### Analysis of Variance

<table>
<thead>
<tr>
<th></th>
<th>DF</th>
<th>SS</th>
<th>MS (SS/DF)</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor</td>
<td>4</td>
<td>7.84</td>
<td>1.96</td>
<td>1.15</td>
</tr>
<tr>
<td>Error</td>
<td>20</td>
<td>34.00</td>
<td>1.70</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>41.84</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Level Means

<table>
<thead>
<tr>
<th>Level</th>
<th>N</th>
<th>Mean</th>
<th>St. Dev.</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>C43</td>
<td>5</td>
<td>4.00</td>
<td>1.73</td>
<td>Factor</td>
</tr>
<tr>
<td>C44</td>
<td>5</td>
<td>2.80</td>
<td>0.84</td>
<td>Financial</td>
</tr>
<tr>
<td>C45</td>
<td>5</td>
<td>2.40</td>
<td>0.89</td>
<td>Legal &amp; Rel.</td>
</tr>
<tr>
<td>C46</td>
<td>5</td>
<td>2.80</td>
<td>1.48</td>
<td>Technical</td>
</tr>
<tr>
<td>C47</td>
<td>5</td>
<td>3.40</td>
<td>1.34</td>
<td>Broad Issues</td>
</tr>
</tbody>
</table>

**Pooled St. Dev. = 1.30**

### Individual 95 Percent C. I. for Level Means

- C43
- C44
- C45
- C46
- C47

**Fig. 21. Importance of Factors - Level 3 Managers**
## Analysis of Variance

<table>
<thead>
<tr>
<th>DUE TO</th>
<th>DF</th>
<th>SS</th>
<th>MS=SS/DF</th>
<th>F-RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACTOR</td>
<td>4</td>
<td>25.14</td>
<td>6.28</td>
<td>3.25</td>
</tr>
<tr>
<td>ERROR</td>
<td>60</td>
<td>116.00</td>
<td>1.93</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>64</td>
<td>141.14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>N</th>
<th>MEAN</th>
<th>ST. DEV.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C37</td>
<td>13</td>
<td>4.38</td>
<td>1.19</td>
</tr>
<tr>
<td>C38</td>
<td>13</td>
<td>3.77</td>
<td>1.30</td>
</tr>
<tr>
<td>C39</td>
<td>13</td>
<td>3.08</td>
<td>1.44</td>
</tr>
<tr>
<td>C40</td>
<td>13</td>
<td>2.92</td>
<td>1.26</td>
</tr>
<tr>
<td>C41</td>
<td>13</td>
<td>2.69</td>
<td>1.70</td>
</tr>
</tbody>
</table>

**Pooled St. Dev. = 1.39**

**Indirect 95 Percent C. I. for Level Means**
(Based on Pooled Standard Deviation)

**C37**

**C38**

**C39**

**C40**

**C41**

**Fig. 22. Importance of Factors - Level 2 Managers**
tant and technical factors and broad issues to be, relatively, the least important. However, the manager's level does seem to make a significant difference on the relative importance of financial and legal/regulatory factors (F values of 3.09 and 2.71 respectively at $\alpha = 0.05$, both significant). Level 2 managers seem to pay much more emphasis on financial factors compared to either level 1 or level 3 managers. Level 1 managers, on the other hand, place a far greater importance on legal/regulatory factors compared to other managers.

DIFFICULTY IN OBTAINING INFORMATION ON FACTORS

The scores on the difficulty in obtaining information for the various factors were analyzed with a one way variance test (Fig. 23) and also by paired comparison through Mann-Whitney tests. The variance test indicates that the scores are not significantly different (F ratio 0.71 against critical F value of 1.25 at $\alpha = 0.05$). Thus, there seems to be no perception of any difference in the difficulty of obtaining information on any of the factors. The Mann-Whitney tests confirm this conclusion.

Further, it was also found that the organization and manager variables do not affect the perception of relative difficulty in obtaining information on the various factors. This was established through a test procedure identical to what was followed for investigating the influence of organization and manager variables on the relative importance of factors.

Thus managers perceive all factors to be more or less equally difficult to collect information on and this perception is independent of
## Analysis of Variance

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS = SS/DF</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor</td>
<td>4</td>
<td>13.88</td>
<td>3.47</td>
<td>0.71</td>
</tr>
<tr>
<td>Error</td>
<td>110</td>
<td>539.91</td>
<td>4.91</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>114</td>
<td>553.79</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Levels

<table>
<thead>
<tr>
<th>Level</th>
<th>N</th>
<th>Mean</th>
<th>St. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C16</td>
<td>23</td>
<td>4.04</td>
<td>2.20</td>
</tr>
<tr>
<td>C17</td>
<td>23</td>
<td>3.43</td>
<td>2.15</td>
</tr>
<tr>
<td>C18</td>
<td>23</td>
<td>3.30</td>
<td>2.29</td>
</tr>
<tr>
<td>C19</td>
<td>23</td>
<td>3.26</td>
<td>2.12</td>
</tr>
<tr>
<td>C20</td>
<td>23</td>
<td>3.00</td>
<td>2.32</td>
</tr>
</tbody>
</table>

**Pooled St. Dev. = 2.22**

### Individual 95 Percent C. I. for Level Means

(Based on Pooled Standard Deviation)

<table>
<thead>
<tr>
<th>Level</th>
<th>Lower Limit</th>
<th>Upper Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>C16</td>
<td>1.80</td>
<td>4.40</td>
</tr>
<tr>
<td>C17</td>
<td>2.40</td>
<td>5.80</td>
</tr>
<tr>
<td>C18</td>
<td>3.00</td>
<td>6.40</td>
</tr>
<tr>
<td>C19</td>
<td>3.60</td>
<td>7.00</td>
</tr>
<tr>
<td>C20</td>
<td>4.20</td>
<td>8.40</td>
</tr>
</tbody>
</table>

**Fig. 23. Difficulty in Obtaining Information on the Factors**
the organization and the manager variables.

FLEX POINTS AND FACTOR IMPORTANCE

Flex points were defined as points of major change in the level of business activity in a particular market like entry or exit. A steady-state, on the other hand was defined as a continuing business at a steady level.

22 out of the 23 respondents felt that there was no difference in the relative importance of factors between a flex point and a steady state. This provides a substantial evidence that as far as collecting information is concerned, managers do not distinguish between the importance of various factors when they are entering a new market compared to a situation of maintaining a current presence.

RELATIVE IMPORTANCE OF PERSONAL AND IMPERSONAL SOURCES

22 out of the 23 respondents identified personal sources of information (directed to the manager, either orally or in the written form) to be more important than impersonal sources (generally available sources like trade shows, data base, reports, general and trade publications). Thus the relative importance of personal sources was established unambiguously. This came out as an all pervasive perception with neither manager nor organization variables being material in the relative assessment.

RELATIVE IMPORTANCE OF ORAL AND WRITTEN MODES

22 out of the 23 respondents considered the written mode to be
more important than the oral mode for collection of information. Manager or organization variables were clearly irrelevant to the very strong perception in favor of the written form.

**RELATIVE IMPORTANCE OF INTERNAL AND EXTERNAL SOURCES**

70% of respondents felt internal sources to be more important than external sources. Composition of respondents favoring internal sources over external sources was as follows:

**Organizational Variables**

<table>
<thead>
<tr>
<th>SIZE OF ORGANIZATION</th>
<th>Large</th>
<th>Medium</th>
<th>Small</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No. Considering Internal Sources more Important</td>
<td>5</td>
<td>7</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>2. Total No. of Respondents</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>23</td>
</tr>
<tr>
<td>3. % Favoring Internal Sources</td>
<td>71.4</td>
<td>87.5</td>
<td>50.0</td>
<td>70.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEVEL OF TECHNOLOGY</th>
<th>Hi-Tech</th>
<th>Traditional</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No. Considering Internal Sources more Important</td>
<td>2</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>2. Total No. of Respondents</td>
<td>3</td>
<td>17</td>
<td>23</td>
</tr>
<tr>
<td>3. % Favoring Internal Sources</td>
<td>33.3</td>
<td>82.3</td>
<td>70.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXTENT OF INTERNATIONALIZATION</th>
<th>Domestic</th>
<th>Export</th>
<th>Internat'l</th>
<th>Multinat'l</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No. Considering Internal Sources more Important</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>2. Total No. of Respondents</td>
<td>3</td>
<td>4</td>
<td>9</td>
<td>4</td>
<td>23</td>
</tr>
<tr>
<td>3. % Favoring Internal Sources</td>
<td>33.3</td>
<td>100.0</td>
<td>77.8</td>
<td>75.0</td>
<td>70.0</td>
</tr>
</tbody>
</table>
Manager Variables

<table>
<thead>
<tr>
<th></th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No. Considering Internal Sources more Important</td>
<td>3</td>
<td>9</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>2. Total No. of Respondents</td>
<td>5</td>
<td>13</td>
<td>5</td>
<td>23</td>
</tr>
<tr>
<td>3. % Favoring Internal Sources</td>
<td>60.0</td>
<td>69.2</td>
<td>80.0</td>
<td>70.0</td>
</tr>
</tbody>
</table>

COMPANY EXPERIENCE

<table>
<thead>
<tr>
<th></th>
<th>Inexperienced</th>
<th>Moderately Experienced</th>
<th>Experienced</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No. Considering Internal Sources more Important</td>
<td>2</td>
<td>1</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>2. Total No. of Respondents</td>
<td>5</td>
<td>1</td>
<td>17</td>
<td>23</td>
</tr>
<tr>
<td>3. % Favoring Internal Sources</td>
<td>40.0</td>
<td>100.0</td>
<td>76.5</td>
<td>70.0</td>
</tr>
</tbody>
</table>

INTERNATIONAL MANAGEMENT EXPERIENCE

<table>
<thead>
<tr>
<th></th>
<th>Inexperienced</th>
<th>Moderately Experienced</th>
<th>Experienced</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No. Considering Internal Sources more Important</td>
<td>4</td>
<td>0</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>2. Total No. of Respondents</td>
<td>7</td>
<td>0</td>
<td>16</td>
<td>23</td>
</tr>
<tr>
<td>3. % Favoring Internal Sources</td>
<td>57.1</td>
<td>--</td>
<td>75.0</td>
<td>70.0</td>
</tr>
</tbody>
</table>

Variance analysis was carried out to test the influence of the independent organization and manager variables on the perception of relative importance of internal and external sources. Only one variable, viz, the level of internationalization was found to have a significant impact; the influence of the other variables was not found to be statistically significant.

It was observed that export firms (organizations whose involvement in international business is primarily through export and who have a
separate export department) assign significantly more importance to internal sources over external sources compared to domestic, international or multinational organizations. This inference was also confirmed through a series of paired Mann-Whitney tests.

**RELATIVE IMPORTANCE OF DIFFERENT INTERNAL SOURCES**

A one-way variance test confirmed that there is a significant difference in the perceived importance of the various internal sources of information (F ratio of 32.25 against critical value of F = 1.35 for α = 0.05). Company personnel posted abroad and home office personnel with relevant international experience were clearly identified as the two most important internal sources of information and meetings and other sources were clearly found to be far less important. Importance of internal reports, as a source of information, lay somewhere between these two extremes (Fig. 24).

**EFFECT OF ORGANIZATION VARIABLES ON RELATIVE IMPORTANCE OF INTERNAL SOURCES**

The effect of organization variables on the relative importance of the internal sources was investigated through a series of variance tests and Mann-Whitney tests in a manner identical to what was followed for analyzing the influence of these variables on the relative importance of various factors.

The size of the firm was found to have no significant effect on the relative importance of different internal sources. However, both the other organizational variables — viz, level of technology and the extent of internationalization — were found to have a significant
### ANALYSIS OF VARIANCE

<table>
<thead>
<tr>
<th>DUE TO</th>
<th>DF</th>
<th>SS</th>
<th>MS = SS/DF</th>
<th>F-RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACTOR</td>
<td>4</td>
<td>43.509</td>
<td>10.877</td>
<td>32.25</td>
</tr>
<tr>
<td>ERROR</td>
<td>105</td>
<td>35.409</td>
<td>0.337</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>109</td>
<td>78.918</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>N</th>
<th>MEAN</th>
<th>ST. DEV.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C30</td>
<td>22</td>
<td>0.955</td>
<td>0.213</td>
</tr>
<tr>
<td>C37</td>
<td>22</td>
<td>0.545</td>
<td>0.596</td>
</tr>
<tr>
<td>C38</td>
<td>22</td>
<td>-0.591</td>
<td>0.503</td>
</tr>
<tr>
<td>C39</td>
<td>22</td>
<td>-0.136</td>
<td>0.834</td>
</tr>
<tr>
<td>C40</td>
<td>22</td>
<td>-0.636</td>
<td>0.581</td>
</tr>
</tbody>
</table>

**POOLED ST. DEV. = 0.581**

**INDIVIDUAL 95 PERCENT C. I. FOR LEVEL MEANS**
(BASED ON POOLED STANDARD DEVIATION)

```
+-------------------------------------------+-----------------+-----------------+-----------------+-----------------+-----------------+-----------------+-----------------+
| C30                                  | I*****I*****I  |
| C37                                  | I*****I*****I  |
| C38                                  | I*****I*****I  |
| C39                                  | I*****I*****I  |
| C40                                  | I*****I*****I  |
+-------------------------------------------+-----------------+-----------------+-----------------+-----------------+-----------------+-----------------+
```

-1.20  -0.80  -0.40  -0.00  0.40  0.80  1.20

**FIG. 24. IMPORTANCE OF INTERNAL SOURCES**
influence.

Hi-tech firms find company people posted abroad to be far more important than firms with a more stable technological environment (Mann-Whitney test significant at $\alpha = .001$). This was the only area where the level of technology of the firm appears to have caused a statistically significant difference.

The extent of internationalization was found to have a significant influence on the perception of relative importance of two internal sources of information -- company people posted abroad and in house meetings. Export and international firms consider company people posted abroad to be significantly more important than either domestic or multinational firms. Similarly, while all firms place a low value on in house meetings as sources of information, export firms consider them to be relatively more important than organizations at the other stages of internationalization.

**EFFECT OF MANAGER VARIABLES ON RELATIVE IMPORTANCE OF INTERNAL SOURCES**

Among the manager variables, only the hierarchical level of the manager was found to make a significant difference in the assessment of relative importance of various internal sources. Level 2 managers appear to be far more polarized in their opinion about the usefulness of various sources. They clearly distinguish between company people abroad and home office executives with relevant international experience as important and the other sources as relatively unimportant. Level 1 and level 3 managers, on the other hand, do not make such a sharp distinction. While the relative ranking of various sources in the order of importance is not
significantly altered by the level of the manager, the variance between the importance scores are far less for level 1 ($F = 4.21$ at $\alpha = 0.05$) and level 3 ($F = 2.48$ at $\alpha = 0.05$) managers compared to level 2 ($F = 32.33$ at $\alpha = 0.05$) managers.

The experience of the manager either with the company or in the field of international business was found to have no significant influence on the relative importance of the various internal sources.

**RELATIVE IMPORTANCE OF EXTERNAL SOURCES**

Variance analysis of the importance scores for the various external sources clearly indicated a significant difference in their relative importance for the scanning process. The average importance scores for the different sources, the standard deviations and the 95% confidence intervals are shown in Fig. 25. The $F$ ratio score of 10.34 was substantially larger than the critical $F$ value of 1.00 at $\alpha = 0.05$.

Customers/suppliers and foreign agents were clearly indicated as far as more important external sources of information compared to general and trade publications or trade shows. The importance of consultants was found to lie between these two extremes.

**EFFECT OF ORGANIZATION VARIABLES ON RELATIVE IMPORTANCE OF EXTERNAL SOURCES**

All the organizational variables including company size, level of technology and the extent of internationalization were found to have significant influence on the perception of relative importance of various external sources of information.

The size of the company was found to have a significant impact on
### ANALYSIS OF VARIANCE

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS = SS/DF</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor</td>
<td>5</td>
<td>126.09</td>
<td>25.22</td>
<td>10.34</td>
</tr>
<tr>
<td>Error</td>
<td>132</td>
<td>321.83</td>
<td>2.44</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>137</td>
<td>447.91</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level</th>
<th>N</th>
<th>Mean</th>
<th>St. Dev.</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>C22</td>
<td>23</td>
<td>3.39</td>
<td>1.59</td>
<td>Consultants</td>
</tr>
<tr>
<td>C23</td>
<td>23</td>
<td>4.78</td>
<td>1.70</td>
<td>Customers/Suppliers</td>
</tr>
<tr>
<td>C24</td>
<td>23</td>
<td>2.43</td>
<td>1.65</td>
<td>General Publications</td>
</tr>
<tr>
<td>C25</td>
<td>23</td>
<td>2.78</td>
<td>1.54</td>
<td>Trade Publications</td>
</tr>
<tr>
<td>C26</td>
<td>23</td>
<td>2.57</td>
<td>1.31</td>
<td>Trade Shows</td>
</tr>
<tr>
<td>C27</td>
<td>23</td>
<td>4.65</td>
<td>1.56</td>
<td>Agents Abroad</td>
</tr>
</tbody>
</table>

**Pooled St. Dev. = 1.56**

**INDIVIDUAL 95 PERCENT C. I. FOR LEVEL MEANS**

(Based on Pooled Standard Deviation)

<table>
<thead>
<tr>
<th>Level</th>
<th>C.I.</th>
<th>C.I.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C22</td>
<td></td>
<td>I<em><strong>I</strong></em>I<em><strong>I</strong></em>I<em><strong>I</strong></em>I***</td>
</tr>
<tr>
<td>C23</td>
<td></td>
<td>I<em><strong>I</strong></em>I<em><strong>I</strong></em>I<em><strong>I</strong></em>I***</td>
</tr>
<tr>
<td>C24</td>
<td></td>
<td>I<em><strong>I</strong></em>I<em><strong>I</strong></em>I<em><strong>I</strong></em>I***</td>
</tr>
<tr>
<td>C25</td>
<td></td>
<td>I<em><strong>I</strong></em>I<em><strong>I</strong></em>I<em><strong>I</strong></em>I***</td>
</tr>
<tr>
<td>C26</td>
<td></td>
<td>I<em><strong>I</strong></em>I<em><strong>I</strong></em>I<em><strong>I</strong></em>I***</td>
</tr>
<tr>
<td>C27</td>
<td></td>
<td>I<em><strong>I</strong></em>I<em><strong>I</strong></em>I<em><strong>I</strong></em>I***</td>
</tr>
</tbody>
</table>

1.60 2.40 3.20 4.00 4.80 5.60 6.40

**FIG. 25. IMPORTANCE OF EXTERNAL SOURCES**
the relative importance of customers/suppliers and foreign agents but not on the relative importance of consultants or publications.

Customers/suppliers were perceived as significantly more important external sources of information by medium and small firms compared to large firms. Medium size firms seemed to value this source more than both large and small firms.

Similarly, medium and small firms rated agents abroad as significantly more important compared to the rating of large firms. Comparatively, small firms perceive agents abroad to be more important compared to firms of larger size.

Generally, large companies perceive considerably less difference between the relative importance of the various external sources compared to medium and small companies. In fact, statistically speaking, they consider all external sources to be more or less equally important (F ratio 0.81, not significant at $\alpha = 0.05$) while medium and small companies make a far sharper distinction between the relative importance of the sources.

A very similar pattern was observed while analyzing the effect of the level of technology on the relative importance of factors. High technology firms were found to perceive all external sources to be more or less equally important (F ratio of variance test was 0.95, not significant at $\alpha = 0.05$) while firms in a more traditional technological environment made a sharp distinction between the importance of various sources with customers/suppliers and agents abroad being perceived as significantly more important than the others (F ratio 11.31).

Similarly, domestic firms were found not to differentiate between the
various sources in terms of their relative importance (F ratio 1.03 with critical F value of 1.58 at \( \alpha = 0.05 \)) while export, international and multinational firms perceived a statistically significant distinction between the sources in terms of their relative importance. This distinction was found to be sharpest for export firms (F ratio 7.40) and relatively less sharp for international (F ratio 5.07) and multinational (F ratio 3.19) organizations.

The organization variables, however, did not affect the relative ranking of the various external sources in their order of importance. Primarily, they influenced the extent to which the sources were distinguished and large sized firms, hi-tech firms and domestic firms were found to consider all external sources as more or less equally important while relatively smaller, more traditional technology firms and firms with a greater degree of internationalization made a much sharper distinction among the sources in terms of their relative importance.

EFFECT OF MANAGER VARIABLES ON RELATIVE IMPORTANCE OF EXTERNAL SOURCES

Level 2 managers were found to make a very sharp distinction between the various sources in terms of their relative importance (F ratio 18.37) and they considered customers/suppliers to be most important with agents abroad following closely behind. The other sources were perceived as relatively far less important with general publications being considered as the least important.

Level 3 managers made a significant distinction between the sources but with a far less variance compared to level 2 managers (F ratio 2.48). Level 1 managers were found to consider all sources as more or less
equally important (F ratio 0.35, not significant at $\alpha = 0.05$).

An interesting finding is that level 3 managers considered consultants to be considerably more valuable as a source of information than did their senior colleagues.

Level 1 managers were found to place less importance on customers and suppliers as a source of information than did relatively junior managers. In fact the importance score of this source was highest for level 2 managers (5.77) compared to level 3 (4.00) or level 1 (3.00) managers. These differences were found to be statistically significant (F ratio 4.60).

Level 2 managers were found to place the least importance on general publications (average score of 1.85) compared to level 3 (average score of 2.80) and level 1 managers (average score of 3.60). In fact, level 1 managers indicated general publications as the second most important source while level 2 managers considered this source as the least important. The level of the manager was not found to make a significant difference on the relative importance of trade publications, trade shows or foreign agents.

The experience of the manager, either with the company or in the field of international business, was found to have no significant influence on the relative importance of the various sources except for inexperienced managers being found to rate general publications as more important compared to their more experienced colleagues. Both variance tests and paired Mann-Whitney tests failed to yield any other significant impact of manager's experience on the scores of all the other external sources of information.
INTERPRETATION OF RESULTS AND ANALYSIS

RESERVATIONS

Before proceeding with an analysis of the results, it is necessary to consider explicitly the various limitations of this study and the possible effects of such limitations on the validity and generalizability of the results.

**Sampling Bias:** Questionnaires were mailed to a sample of 91 managers, each representing a different organization. As mentioned earlier, there was a degree of arbitrariness in picking the final sample and this could have introduced a sampling bias. However, it can be argued that the sampling process, while arbitrary, was such that there was no reason to suspect the introduction of systematic bias of a magnitude that can invalidate the findings.

**Non-Response Bias:** In total, 23 out of the 91 organizations responded. While non-response bias, to an extent, is undeniably present, the response pattern does not indicate this to a major source of error in the study findings.

**Key Informant Bias:** Phillips has criticized the method of asking 'key informant' questions about the firm and its environment. He has demonstrated that bias can be introduced due to factors like personal characteristics and individual position. Webb et al have gone a step further than Phillips and have argued that all data collection methods are biased and that some degree of bias has to be accepted by any researcher.

Since such measurement error cannot be eliminated, any study can only attempt to minimize it. Campbell has shown that key informants
provide highly accurate data when they are knowledgeable about the issue and he has recommended that questions be clear, direct, specific and in the language of the respondents. Phillips also has suggested that respondent bias can be minimized by asking direct, specific and simple questions.

To reduce the respondent bias, two methods were followed in this study. First, organizations and managers were chosen to ensure that they were clearly involved in international management and were knowledgeable on the subject. Second, the questions were made direct, simple and specific and adequate explanations were provided to permit a clear understanding of the information being sought.

It is undoubtedly true that respondent bias exists in this study; it is only hoped that the bias is not serious enough to vitiate the findings entirely.

**Small Sample:** A study based on only 23 responses cannot claim to have the quality of definitiveness in its findings nor can a claim of unambiguous generality be made for any of the results. The objective of this study was not to come to any such definitive conclusions. The study was merely designed as a pilot project to obtain a sense of possible further research directions and the analysis of results that follows must be reviewed with this severe limitation of a small sample clearly in view.

**Omitted Variables:** The limited scope of the study did not permit consideration of more than only a few of the possible independent variables identified in the conceptual framework. This is a major limitation of the study and it is possible that some of the associations drawn may be
better explained if the omitted variables are given due consideration. **Multicollinearity:** The statistical analysis of the data does not consider the possibility and implications of multicollinearity for the simple reason that very few data points were available. Multicollinearity undoubtedly exists and the only way to pull out the separate effects of the variables is to obtain more data. With the limitation of inadequate data, there is a possibility that some of the parameter estimates may prove to be unstable.

In addition, Maddala has demonstrated that there may be more correlation among a set of variables than appears from examination of a two-by-two relationship. This essentially calls for a sensitivity analysis and that was beyond the scope of this study with its limited database.

**Variance Analysis:** In drawing conclusions about the distinction among the various constituents of the scanning process in terms of factors and sources, results of one-way variance tests have been considered. It can be argued that the conclusions may not be valid since other variables may be able to account for some or all of the variance ascribed to random movements. Two-way variance tests or more sophisticated statistical techniques are called for to investigate this possibility.

This could not be done in this study but it is expected that the possibilities suggested by this study will be of use in finalizing the experimental design of the larger study which, in turn, will generate adequate data to permit such relatively more complex analysis.
COMPARISON WITH PREVIOUS FINDINGS

Relative Importance of Factors

The previous studies arrived at indicators of relative importance of factors based on measures of central tendency of the factor scores. On this basis, our results find selective confirmation for the past studies. Market factor does emerge as the most important -- a conclusion that all the past studies came to. However, the difference between average factor scores does not support the overwhelming importance of market factors indicated by the Aguilar study. To the extent that both Keegan and Kefalas found the difference in relative importance of factors to be less than what was suggested by Aguilar, our findings are more in conformity with theirs.

It is not possible to compare the relative importance scores of the other factors due to differences in factor definition. None of the past studies had defined a category of 'financial factor', but the fact that this category obtained the second highest average score among all factors in our study strongly recommends a separate identification of this factor.

The relatively high share of legal and regulatory factors broadly confirms the results of Keegan, who found prescriptive information as the second most important factor after market information. Both Aguilar and Kefalas had found technology factors as the second most important category -- a conclusion not consistent with our findings of technology factors obtaining the lowest average score. Two possible explanations can be advanced to explain this discrepancy. Both Aguilar and Kefalas considered the overall scanning process -- not specifically multina-
tional scanning by firms involved in international business. Possibly, technology factors are perceived as more crucial for domestic operations but are not perceived as equally important in the field of international business. Besides, almost all our respondents were in various levels of general management and it is possible that most of them had a non-technical background. This is different from the earlier studies where the manager's functional specialization was included as an independent variable. The absence of technical or other specialists from our sample could have caused the low score of 'technology factor'.

Perception of Distinction Between Factors in Order of Importance

Our findings suggest that managers do not distinguish between factors except to the extent that market information is considered to be significantly more important than information on the other factors. We arrived at this conclusion based on an analysis of the variance of factor scores.

This is a point of sharp divergence between our findings and the results of past surveys. All the past researchers took the distinction between factors for granted and arrived at quantitative measures of the importance placed on the various factors. The average scores of factor importance were used to rank the relative importance of factors -- whether managers perceive and operationalize this difference in their actual scanning activity was not investigated.

It is interesting that the relative gap between average factor scores for most of the factors (other than market factor) in all the studies were relatively low. In the case of Aguilar, for instance,
three of the five factors had a score between 7% and 9%. None of the researchers reported the variance of factor scores and it cannot be estimated if their data did indicate statistically significant differences between the scores. Given the small gap in average scores, one can surmise that a variance analysis may not have indicated existence of such a distinction.

If, as our results suggest, managers do not distinguish between the factors except in the very general sense that market information is considered to be more important than others, there is a possibility that such categorization into factors may not be an effective representation of scanning as it is undertaken by practitioners. Indeed this suggests that the alternative conceptualization by Kalff with 'issues' dominating the information acquisition process may be a more appropriate paradigm. With a particular issue dominating the domain of their current concern, managers may be seeking all possible information on the issue -- including information on all the factors with market information being perceived as the most important.

Influence of Organization and Manager Variables on Factor Importance

Comparison of the results with regard to the influence of organization and manager variables on factor importance is difficult due to methodological differences in the studies. However, Keegan's conclusion that top managers perceived prescriptive information to be much more important than did middle or junior managers is confirmed by our results.

But Keegan also found that top managers consider market information
to be the least important among all the categories -- a result that is entirely contradictory with all the other studies including ours.

However, our overall conclusion is that the organization or manager variables do not have a significant impact on factor importance. This finding is entirely consistent with the hypothesis that issues and not factors (as defined by us and by past researchers) are the appropriate units that determine the scanning priorities. This conclusion, again, cannot be checked with the past results which did not carry out the required statistical investigation.

**Flex Points**

The strong evidence that relative importance of factors do not change at flex points compared to a steady state is counter-intuitive and provides another indication of the fact that a conceptualization of the scanning process in terms of factors of information is inappropriate. There is strong evidence that firms do not follow identical processes of information collection when they are planning a major change in the activity level in a particular market compared to a steady state when they are maintaining the current level of presence. Yet, our paradigm, based on a categorization in terms of factors, is unable to capture this difference.

**Relative Importance of Sources and Modes**

The overwhelming importance of written communication in the scanning process revealed in our study is in sharp contrast to the importance of oral communication identified by Keegan. This could be due to the differences in data collection procedure, as suggested by him. How-
ever, it is also possible that the instance recall technique results in the recall of certain types of situations and not others and to that extent this technique may not result in a true representation of the entire scanning process. This question will be dealt with in greater detail in a subsequent section.

The Keegan study also found meetings to be the single most important source of information. Aguilar and Kefalas, on the other hand, found meetings to be the least important source. Our results also indicate meetings to be a relatively unimportant source of information and the relative score is in broad agreement with Aguilar and Kefalas.

With regard to the relative importance and usage of personal vs. impersonal sources, all the studies including the present one arrive at a common conclusion that personal sources are far more important than impersonal sources.

Our survey shows inside sources to be more important than outside sources with about 70% of respondents indicating a preference for inside sources. Both Aguilar and Keegan had found outside sources to be more important than inside sources by about the same margin. But our results are entirely consistent with the questionnaire survey done by Keegan and, prima facie, this seems to validate Keegan's findings regarding the divergence of results between a questionnaire survey and a survey based on personal interviews.

Broadly, our results are in agreement with Aguilar and Keegan to the extent that human sources are found to be more important than other sources. Naturally, the results are not consistent with Kefalas who found human sources to be the least important. With regard to the rela-
tive importance of specific sources, our results are in broad agree-
ment with those of Aguilar but differ substantially from the results of
Keegan and Kefalas.
CONCLUSION

DEGREE OF CONTROL

A careful review of our data seems to indicate a certain pattern. Compared to junior or top managers (level 3 or level 1), middle managers show a far greater preference for internal sources over external sources. Similarly, they are far more polarized in their view regarding relative importance of sources -- they perceive company employees, customers/suppliers and agents as important sources and all others including consultants, publications, trade shows etc. as unimportant sources. Both top and junior managers appear to be far less polarized and they do not make as sharp distinctions between the importance of various sources.

It seems that a desire for control may explain this variation. For both junior and middle managers, the internal corporate environment is more important than the external environment. But, within this environment, middle managers (e.g., Vice Presidents) get used to exercising a far greater control than junior managers. Top managers, on the other hand, are far more involved with the external environment where they exercise relatively little control.

Thus, top and junior managers have a common attribute -- both find themselves in positions where they cannot or do not exercise a great deal of control on their relevant environments. Middle managers, on the other hand, get used to dealing with a greater degree of control on their relevant environment.

This, one can hypothesize, spreads over in their scanning behavior.
Middle managers, used to dealing from a position of control, opt for sources on which they have a degree of control. Top and junior managers, on the other hand, are able to interact with and use sources like consultants, publications, trade shows etc. over which they do not have control.

A similar pattern may exist for organizations too. Small firms live in a world of uncertainty. As they grow larger in size, they carve out niches and enjoy a degree of stability. As medium sized firms, they feel more in control of the micro-factors that affect small firms and they also remain relatively insulated from the macro factors that affect large firms. But this perception of control is lost as they grow into large firms when they are again exposed to a great deal of environmental uncertainty -- but of a variety quite different from that experienced by small firms. As large firms, they are affected by the mega trends, the macro-environment and they relearn their ability to live and cope with uncertainty and loss of control. Thus, in their scanning behavior, medium sized firms, like middle level managers, develop a great polarization with clear preference for sources they can control. Both large and small firms remain far more open to all kinds of sources.

On exactly similar lines it can be argued that firms with a stable technological environment tend to prefer controllable sources while hi-tech firms, by virtue of the uncertainty, change and uncontrollability of their environment, learn to use all sources in their information acquisition process.

Fig. 26 attempts to represent this hypothesis that preference for
information sources is influenced by the degree of control an organization or a manager exercises on his relevant environment. Greater the perception of control, greater is the reliance on sources that are controllable.

SUGGESTION FOR A NEW PARADIGM

A model of the scanning process in terms of factors and sources has obvious limitations. This is manifest in the contradictions in the results of all past surveys including the present study.
At the same time, we find it difficult to accept the organizational or inter-organizational models since acquiring information, ultimately, is a human activity. A machine, or an organizational system can collect data but it is only human perception that turns data into information. Thus, in the process of collecting external information, the characteristics of the collecting individual, the manager, must have a role. The organization clearly influences the process of defining information needs. Organizational characteristics and systems can also influence the scanning process. But, the manager too affects the way information is acquired and we feel that there is a need for a paradigm that combines these influences and that can explain the divergence in the results of all the studies.

Our understanding of the scanning process is limited. We have not conducted any of the situational studies which are essential to develop such an understanding. Yet, based on personal experience, discussions with a few other managers, researchers and students and based on our data, we suggest a new paradigm (Fig. 27).

A manager stands at the interface between an organization and its environment. He continuously interacts with both and, in all such interactions, he is influenced by his own personality, position and role.

In his functioning, he is exposed to a whole range of issues — from within the organization and also from the environment. At any given point of time one or a set of issues dominate his immediate concern.

To respond to these issues, a manager seeks information. We define scanning broadly as the process by which he attempts to acquire
this information.

We hypothesize that for a given issue, the manager develops a perception -- he categorizes the issue either as a threat or as an opportunity. He also categorizes the possible impact of the issue as either strong or weak. Thus, any issue is placed in one of four categories depending on the manager's perception of its possible impact -- a strong threat, a weak threat, a strong opportunity, and a weak opportunity.

![Diagram showing the scanning process]

**FIG. 27.** THE SCANNING PROCESS

For each of these categories, the manager adopts a particular scanning mode as shown in Fig. 27. These modes have been labeled as the
crisis mode (strong threat), the research mode (strong opportunity),
the investigation mode (weak threat) and the interest mode (weak oppor-
tunity).

Each of these modes is characterized by a different scanning pro-
cess. In the crisis mode the focus is inwards and defensive -- the man-
ger depends on internal sources, preferably company employees and calls
upon his personal network to collect information quickly. In this
mode, speed is perceived as the essence and sources that respond quickly
and that provide credible and pre-digested information are preferred.

In the research mode, the manager becomes much more thorough and
defines his information needs more extensively. He looks for all pos-
sible angles and all possible views. Thus, in this mode, external
sources become important and, in particular, consultants and trade pub-
lications are considered far more useful than, say, in the crisis mode.

In the investigation and interest modes, the scanning process is
far less focused. A breadth of sources are used though, relatively, in-
ternal sources retain greater importance in the investigation mode com-
pared to the interest mode. In fact, in the interest mode the manager
merely increases his level of sensitivity towards information relevant
to the issue but does not initiate any process to seek out actively any
particular item of information through any particular source.

In an interview situation, when a manager is asked to recall a
particular scanning situation, he is most likely to recall an instance
in the research mode for a host of reasons. He perceives the instance
to be most relevant for the researcher and he also perceives that re-
calling the incident would reflect favorably on his own activities and
performance. Besides, recalling a strong opportunity issue, especially if it was handled well, gives him the greatest amount of satisfaction. Thus, all research based on interviews and, in particular, on the instance recall technique, would identify a scanning process based on the research mode. This will show a greater importance on external sources and a greater use of specific sources like consultants, publications, etc.

A questionnaire survey, on the other hand, will evoke memories of strong influences — both of threat and opportunity situations. Since no particular instance will have to be described, the manager's response will be based on a collectivity of all such situations and will probably be dominated by the stronger crisis mode orientation. Thus, such a survey would show a greater emphasis on internal sources, particularly for sources like company employees posted abroad and home office personnel with relevant foreign experience. Customers and suppliers as well as foreign agents would also be shown as important sources for precisely the same reasons.

Level 2 managers represent the highest level of managers engaged heavily in the day to day operations. The exception principle ensures that most of the time level 2 managers find themselves solving urgent and important problems. Thus, their scanning activities are largely limited to the crisis mode. This accounts for the significantly larger importance placed by them on internal sources and their relative disdain for certain sources like publications or consultants.

Many of the contradictions of the past survey results and much of our own findings can be explained by this paradigm. The influences of
most of the organization and manager variables can also be easily explained in terms of this scanning model.
ANNEXURE

THE QUESTIONNAIRE
GATHERING INFORMATION ON INTERNATIONAL BUSINESS:

A QUESTIONNAIRE SURVEY

OBJECTIVES OF THE STUDY: This study is concerned with the way business firms collect information on conditions affecting their international operations, both current and potential. The study attempts to identify the various factors on which information is gathered and the perceived needs and problems with currently available sources. The objective is to understand the relative importance of various factors in this process and to develop a programme for development of the field of international management.

SPONSOR: The study is sponsored by the International Management Program of the Alfred P. Sloan School of Management at the Massachusetts Institute of Technology. The study is being conducted by the faculty and students of the Institute.

CONFIDENTIALITY: All information provided by the respondents shall be treated as strictly confidential. Neither their names nor the identity of their organizations will be revealed in the final reports.

TIME REQUIRED TO COMPLETE THE QUESTIONNAIRE: The questionnaire form looks bulky. The size is due to our efforts to avoid making it clumsy. It will not take more than 20 minutes of your time to fill out. Please leave any question or section that you would rather not answer blank.

GETTING A COPY OF THE FINAL REPORT: Every respondent is entitled to a copy of the final report merely by checking the line below.

I want a copy of the report sent to me.

THANK YOU FOR YOUR COOPERATION
SOME BACKGROUND INFORMATION ON YOUR COMPANY AND YOURSELF:

1. Name: ____________________________________________

2. Position: __________________________________________

3. How long have you been with the company (circle or X one category):
   Under 1 year  1-3 years  3-5 years  5-10 years  over 10 years

4. How many years of experience in international management have you had?
   Under 1 year  1-3 years  3-5 years  5-10 years  over 10 years

5. What are the principal foreign countries in which your company currently
   operates ('operates' covers the range from direct export to local
   manufacture)?

6. What goods or services do you market internationally?

7. What is the approximate annual total sales of your organization?

8. What is the approximate level of sales outside the United States (either
   in dollars or as a percentage of total sales)?

9. Approximately how many of your firm's executives are posted abroad?

10. Approximately how many business trips abroad do you make per year?
11. Which of the following most accurately describes your company (please check only one):

(a) We do not have a separate export department; officers handling domestic operations also take care of export orders, as needed

(b) We have a separate export department to handle exports

(c) We have an international division which handles all aspects of international operations including production, marketing, etc.

(d) We are a multinational company with an integrated multinational organization and control system

12. How important is the role of international expansion in the growth of your company during the next five years:

(a) All or almost all of our growth will come from international operations

(b) International and domestic operations will contribute almost equally to our future growth

(c) Almost all our future growth will come from domestic operations

(d) We are reducing our international operations and concentrating on domestic operations

13. In international operations, which of the following is more important to your company growth plans:

(a) Greater penetration of existing markets

(b) Entry into new markets

14. In selecting managers for international operations, what skills do you look for? Please rate the following on a scale of 5 (very important) to 1 (not important):

(a) First-hand experience of the relevant country

(b) Thorough knowledge of the local language

(c) Previous experience in international management

(d) Appropriate functional skills

(e) Thorough knowledge of your products

(f) Thorough knowledge of your company and its operations

(g) General intelligence and social skills
One of the key resources in managing international operations is information on a wide range of factors. The following questions attempt to identify the key needs and requirements in international management and the difficulties encountered in meeting those needs. For the purpose of analysis, we have identified a set of broadly designated factors, as follows:

**MARKET FACTORS:** Market potential, market structure, competition, distribution channels, prices, etc.

**FINANCIAL FACTORS:** Capital markets, interest rates, taxation, incentives, etc.

**LEGAL AND REGULATORY FACTORS:** Ownership rules, repatriation controls, patent protection, etc.

**TECHNOLOGY FACTORS:** New products, processes, costs, availability of raw materials and other inputs, etc.

**BROAD SOCIAL AND POLITICAL ISSUES:** Political stability and risk, social norms and customs, cultural factors, etc.

16. Please identify on a scale of 1 to 5 the relative IMPORTANCE of information on these factors for your CURRENT international operations (Put 5 you consider most important, 4 in the next most important, and so on).

   Market factors
   Financial factors
   Legal and regulatory factors
   Technology Factors
   Broad issues

17. Do the relative positions of the factors remain the same for new markets that you might consider entering, as opposed to existing markets in which you already operate?

   Yes ___  No ___

If "No", please rank on the same scale the relative importance of these factors for NEW markets:

   Market factors
   Financial and legal factors
   Legal and regulatory factors
   Technology factors
   Broad issues
18. For some factors information may be more difficult to obtain compared to others. Please rate below the difficulty of obtaining information on these factors, using the same 1 to 5 scale (1 for least and 5 for most difficult).

Market factors

Financial factors

Legal and regulatory factors

Technology factors

Broad issues

19. Which would you identify as the more important source of information for your foreign operations?

Internal sources (own executives abroad, meetings, reports, etc.)

External sources (consultants, suppliers, publications, etc.)

20. Which of the following would you identify as the more important source of information on foreign operations

Personal (directed to you, either verbally or in written form)

Impersonal (generally available: trade shows, general reports publications, etc.)

21. Which of the following would you identify as the more important form of information on foreign operations:

Verbal

Written

22. Information may be available from a number of Internal Sources within your organization. Indicate below which is the most useful (M) and the least useful (L) of the following sources:

Company people posted abroad

People from your own office who have first-hand experience abroad

In-house meetings

Reports and other stored information

Other internal sources
23. Which of the following sources of information is most important (M) and which is least important (L) for obtaining information for managing international operations:

Superiors
Peers
Subordinates

24. Information is also available from a number of external sources. Please rate on a scale of 6 (most useful) to 1 (least useful) the following sources for gathering international information:

Consultants
Customers and suppliers
General publications
Trade publications
Trade shows
Local agents in foreign centers

Please indicate whether you would agree or disagree with the following statements:

1. All the information gathered from various sources is fine, but what really matters in effective decision-making is a feel for the situation which managers can only develop if they travel and get to know the area and the people.

AGREE _______ DISAGREE _______

2. We collect a lot of information but much of it is rarely used. What we need most is not more information but a better system for evaluating information for effective planning.

AGREE _______ DISAGREE _______

3. I would not recommend the use of a consultant for gathering information on international opportunities. It is better to develop the in-house expertise based on a thorough knowledge of the company and its products.

AGREE _______ DISAGREE _______

4. International management requires the same basic skills and attitudes as domestic management.

AGREE _______ DISAGREE _______
5. I would never put a new executive recruit directly into the International management area. International managers first need familiarity with domestic operations.

AGREE _____  DISAGREE _____

6. The United States is at a competitive disadvantage in world markets because the government does not provide the kind of information services and guidance that other countries provide for their exporting companies.

AGREE _____  DISAGREE _____

IF YOU HAVE ANY ADDITIONAL COMMENTS WHICH YOU WOULD LIKE TO ADD, PLEASE USE THE REMAINING SPACE ON THIS PAGE. WE WELCOME ANY COMMENTS ON THE ISSUES RAISED IN THIS QUESTIONNAIRE OR ON THE QUESTIONNAIRE ITSELF. MANY THANKS FOR YOUR COOPERATION.
BIBLIOGRAPHY


