CHAPTER 1

MARKETING INFORMATION SYSTEMS:
A CONCEPTUAL FRAMEWORK

A discussion on the concept, structure and benefits of marketing information system (MKIS) along with details of the available MKIS packages and I.T. spending by Indian business houses provides the backdrop for research problem identification.
MARKETING INFORMATION SYSTEM
A CONCEPTUAL FRAME WORK

INTRODUCTION

Economic reforms and information technology together have changed the face of Indian business. Economic reforms have set into motion forces like liberalization, privatization and globalization that have unleashed competition. Information Technology (IT) has revolutionized the character of the organization, especially marketing. In this context, many business organizations have started spending huge amounts on IT and developing marketing information systems. It will be of interest to know the state of the art of marketing information systems (MKIS) and their effectiveness.

CONCEPT OF MKIS

Marketing Information System (MKIS) is defined by different authors differently. However, content-wise and function-wise there is a common thread.

According to Kinnear and Bernhardt,

"MKIS is defined as a structured, interacting complex of persons, machines and procedures designed to generate an orderly flow of pertinent information, collected from both intra and extra firm's sources for use as the base for decision making in specified responsibility areas for marketing management."

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Kotler maintained:

"A MKIS is a continuing and interacting structure of people, equipment and procedures to gather, sort, analyze, evaluate and distribute pertinent, timely and accurate information for use by marketing decision makers to improve their marketing planning and control"

Cox and Good observed:

"MKIS is a set of procedures and methods for regular, planned collection, analysis and presentation of information for use in making marketing decisions”.

ROLE OF MKIS

From the above definitions, it can be said that the role of MKIS is to provide information support to marketing and other functions in decision making and implementation. In playing this role, it should perform the following six functions

1. **Assembly** – searching for and gathering marketing data
2. **Processing** – editing, tabulating and summarizing data
3. **Analysis** – computing percentages and ratios, combining sales and cost data and various other mathematical tasks
4. **Storage and retrieval** – indexing, filing and locating data
5. **Evaluation** – determining the quality (accuracy) of information
6. **Dissemination** – routing useful information to appropriate decision makers
The information system specific to marketing combines data in the company's data bases with outside data including economic, demographic, and industry statistics. These data serve as input into a variety of forecasts and competitive and pricing models to supply within minutes strategic information that will be impossible to provide with manual systems. Moreover, new and improved information systems convert reams of numbers into charts, colorful graphs and maps that are easy for marketers to understand and digest. Telecommunications, word processors and electronic mail also enable reports, memos and product information to be transmitted simultaneously to a number of marketing personnel, sales people in the field and even customers.

**MKIS Less Systematized**

Marketing information system is less developed in many organizations for the following reasons:

- **Benefit Intangible**: Improved information systems for marketing do not often receive priority because they cannot be justified on a cost saving basis and the benefits of the system may be largely intangible and not readily observable.

- **Marketing is an art**: Marketers believe that marketing decision making is primarily an art and cannot be systematized. Decisions like pricing and promotion rely more on tact than facts, more on intuition than on research.

The lack of systematization of marketing information makes marketing a "seat-of-the-pants" activity in many companies.
NEED FOR SYSTEMATIZATION

1. Marketing – the revenue generator
A well developed MKIS can give competitive advantage by offering better services to customers and better information for market penetration efforts.

2. Critical linkages
Marketing information is not only important to marketing but also to other functions.

3. Global marketing trends
With the globalization of economies, even medium sized domestic firms have the compulsion for thinking globally and acting locally. Consequent, information needs have grown exponentially requiring a system.

4. Info revolution
Blattberg, Glazer and Lazer (1994) traced the evolution of marketing information system to the "marketing information revolution", the fifth stage in evolution process characterized by "decentralized products in decentralized markets". Organizations succeeding in customer control are necessarily better producers, and better system integrators. Bloom, Adler and Milne (1994) opined that marketing information systems using new information technologies serve in many ways. Specifically,

➢ To improve new market knowledge
➢ To improve response capabilities
➢ To improve persuasive communication, and
➢ To improve strategy making.
Stephen (1990) in his empirical analysis of successful competitive strategies in the Austrian market of decoration fabrics noted the strategic role that IT plays in the context of development and transformation of the selected generic competitive strategies.

**Structure of MKIS**

The components of MKIS as perceived and described by different marketing specialists are briefly presented here.

**Brien and Stafford Model**

They made the first effort by presenting a diagram and a narrative. It showed how MKIS could support marketing manager is developing planned programmes for each of the four marketing mix ingredients. The model elements were connected by both information and decision flows (Figure 11).

**Kotler Model**

According to Kotler, MKIS consists of four subsystems — internal accounting, marketing intelligence, marketing research and marketing management science. The subsystems take data from environment and transform it into information for the marketing executive. The emphasis in marketing management science is on the use of sophisticated quantitative techniques, such as simulation. Kotler saw the marketing manager using the information output for planning, execution and control.
Figure 1.1
The Marketing Management Process and Information Flow

Formative or evaluative information from other functional areas of the firm (primary)

Marketing program formulation

Information storage for new opportunities

Product planning and development
1. Product characteristics
2. Product line composition
3. Adding, dropping, modifying products

Pricing strategy
1. Basic price levels
2. Price as an active variable

Channel & distribution strategy
1. Channel structure
2. Types of outlets
3. Market coverage
4. Physical distribution

Promotion strategy
1. Personnel selling
2. Advertising
3. Sales promotion
4. Packaging
5. Publicity
6. Public relations

Market program execution

Consumer behavior and the market environment

Decision flows
Information flows

A { Formative Feedbacks

B { Evaluative Feedbacks

C { Opportunity Search feedback
The output subsystems are the four marketing mix elements plus integrated "mix" subsystem (Table 1). The fifth subsystem enables managers to develop strategies that consider the combined effects of the ingredients. For example, a manager might want the combined effects of high price, moderate quality product, high level promotion and selective distribution of packaged food products. In the recent versions, he dropped the fifth subsystem depicting interrelationship of four subsystems as shown in Figure 1.2.

Figure 1.2
Marketing Information Systems
Table 1.1
The Four Subsystems of Kotler

<table>
<thead>
<tr>
<th>Type</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing Intelligence System</td>
<td>Procedures and <strong>sources to obtain everyday information</strong> - Undirected viewing, Conditioned viewing, informal search and Formal search</td>
</tr>
<tr>
<td>Internal Report System</td>
<td>Regular, predetermined and formatted reports</td>
</tr>
<tr>
<td>Marketing Research System</td>
<td>An occasional inquiry for new information on specific areas for problem solving</td>
</tr>
<tr>
<td>Analytical Marketing System</td>
<td>Statistical bank and model bank</td>
</tr>
</tbody>
</table>

Cox and Good Model

MKIS is a step beyond logistics systems which handle inventory control, orders and so forth. MKIS can be differentiated into two major components:

1. **Support Systems** – They include those activities required to generate and manipulate data i.e. market research and other data gathering, programming and data processing.

2. **Operating Systems** – Those that use the data as an aid to planning and controlling marketing activities.

Wierenga and Bruggen Model

Wierenga and Bruggen integrated the decision maker and decision support systems in marketing. They introduced the concept of marketing problem solving modes (MPSM) – The demand side perspective to marketing management support systems (MMSS), which refer to the set of tools and capabilities that assist in decision making.

They identified four MPSM’s by the four problem solving modes – Optimising (O), Reasoning (R), Analoging (A) and Creating (C), under different decision situations as depicted in Figure 1.3
Figure 1.3
Antecedents of Marketing Problem Solving Modes

Problem Characteristics
- Structuredness
- Depth of knowledge
- Availability of data

Decision Environment Characteristics
- Time constraints
- Market dynamics
- Organizational culture

Decision maker Characteristics
- Cognitive style
- Experience
- Education
- Skills

They examined the availability of MMSS's and the type of support they provide to decision making as shown in Figure 1.4

Figure 1.4
Matching MPSMs and MMSSs

<table>
<thead>
<tr>
<th>MPSM</th>
<th>Object(s) of Support</th>
<th>Modes of Support</th>
<th>Most appropriate MMSS(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimizing</td>
<td>Outcome</td>
<td>Automate</td>
<td>Marketing Model MES</td>
</tr>
<tr>
<td>Reasoning</td>
<td>Process and Learning</td>
<td>Informate</td>
<td>MKIS, MDSS MNN, MKBS</td>
</tr>
<tr>
<td>Analogizing</td>
<td>Process and Learning</td>
<td>Stimulate</td>
<td>MCBR MNN</td>
</tr>
<tr>
<td>Creating</td>
<td>Process</td>
<td>Stimulate</td>
<td>MCEP</td>
</tr>
</tbody>
</table>

9
The characteristics of different types of MMSS's are given in Table 1.2.

### Table 1.2
**Key Words Characterizing the Different Types of MMSSs**

<table>
<thead>
<tr>
<th>Date of origin</th>
<th>Main characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing Models 1960</td>
<td>Mathematical representation</td>
</tr>
<tr>
<td></td>
<td>Optional values for marketing instruments</td>
</tr>
<tr>
<td></td>
<td>Objective</td>
</tr>
<tr>
<td></td>
<td>Best solution</td>
</tr>
<tr>
<td>Marketing Information Systems (MKISs) 1965</td>
<td>Storage and retrieval of data</td>
</tr>
<tr>
<td></td>
<td>Quantitative information</td>
</tr>
<tr>
<td></td>
<td>Registration of “What happens in the market” and “why” (analysis)</td>
</tr>
<tr>
<td></td>
<td>Passive system</td>
</tr>
<tr>
<td></td>
<td>Flexible systems</td>
</tr>
<tr>
<td></td>
<td>Recognition of managerial judgment</td>
</tr>
<tr>
<td></td>
<td>Facilities to “what-if” questions</td>
</tr>
<tr>
<td>Marketing Decision Support System (MDSSs) 1980</td>
<td>Centres on marketing knowledge</td>
</tr>
<tr>
<td></td>
<td>Human experts</td>
</tr>
<tr>
<td></td>
<td>Rule based knowledge representation</td>
</tr>
<tr>
<td></td>
<td>Normative approach best solution</td>
</tr>
<tr>
<td>Marketing Expert Systems (MESSs) 1985</td>
<td>Diversity of methods, including hybrid approaches</td>
</tr>
<tr>
<td></td>
<td>Structured knowledge representation, including frame based hierarchies</td>
</tr>
<tr>
<td></td>
<td>Model based reasoning</td>
</tr>
<tr>
<td>Marketing Knowledge Based Systems (MKBSs) 1990</td>
<td>Similarity with earlier cases.</td>
</tr>
<tr>
<td></td>
<td>Storage of cases in memory</td>
</tr>
<tr>
<td></td>
<td>Retrieval and adaptation</td>
</tr>
<tr>
<td></td>
<td>No generalization</td>
</tr>
<tr>
<td>Marketing Case Based Reasoning Systems (MCBRs) 1995</td>
<td>Training of Associations</td>
</tr>
<tr>
<td></td>
<td>Pattern recognition</td>
</tr>
<tr>
<td></td>
<td>No a priori theory</td>
</tr>
<tr>
<td></td>
<td>Learning</td>
</tr>
<tr>
<td>Marketing Neural Nets (MNNs) 1995</td>
<td>Association through connections</td>
</tr>
<tr>
<td></td>
<td>Idea generation</td>
</tr>
<tr>
<td></td>
<td>Endorsement of creativity in problem solving</td>
</tr>
<tr>
<td>Marketing Creativity Enhancement Programs (MCEPs) 2000</td>
<td>Structured knowledge representation, including frame based hierarchies</td>
</tr>
<tr>
<td></td>
<td>Model based reasoning</td>
</tr>
<tr>
<td></td>
<td>Similarity with earlier cases.</td>
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<td>No generalization</td>
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<td>Idea generation</td>
</tr>
<tr>
<td></td>
<td>Endorsement of creativity in problem solving</td>
</tr>
</tbody>
</table>
Murdick, Ross and Claggett Model

To overcome the shortcomings of month-end sales reporting system, Murdick, Ross and Claggett proposed a general marketing system depicted in Figure 1.5 Characteristic of this type of system is an inquiry capability located in field, branch, district and headquarter offices.

These terminals are connected via teleprocessing facilities to a computer and the system can provide a broad inquiry coverage relating to sales activity updated on a daily basis. The four formats, Sales recap, Record summaries, Transactional analysis and Exceptional inquires would serve the three types of marketing systems --- control system, planning system and market research system.

Sales Recap

It is an overall performance summary compared with previous periods, budgets or other standards. This recap can be programmed to trigger successive levels of detailed reports, when the analysis indicates substandard performance. Major areas of performance analysis might include total sales by product sales expense, new accounts, replacement sales, cancellation rates and a variety of profitability analysis.

Record Summaries

Optimal level of details that permit in-depth analysis of deviations are spotted by sales recap. Ideally, this format should be programmed so that the user can structure his or her own reporting needs. These might include such items as sales by model, by sales plan, by industry, by customer type and sales to major and national accounts. Additionally, a variety of ratios such as sales units to travel expenses should be available if desired.
Transaction Analysis

This format might be called the significant transaction analysis because its purpose is to provide a "management by exception" approach to transactions that are so out of the ordinary that they require special treatment. Such transactions might be defined in terms of rupee volume, number of sales or other significant measures that exceed control limits.

Exceptional Inquires

This is the highest level of systems sophistication in that it gives a true inquiry capability to the user. This can be understood by such questions as, "which sales offices have achieved a level of 50 per cent of their sales in the manufacturing industry but are less than 80 per cent sales quota in the retail industry?" It is easy to see how this inquiry capability is a vital tool to any marketing/sales manager.

MKIS — AN OVERVIEW

From the above presentation, it can be said that MKIS provides support to the marketing elements at the three hierarchical levels. Exhibit 1.1 and Exhibit 1.2 provide a summary view of MKIS.
Figure 1.5
A General Marketing Information System

Sales forecasts
Salesmen expense report
Transportation expense
Warehouse reports
Dealer sales transactions

Customer invoices
Marketing budgets
Sales call reports
Cost reports
Inventory reports
Accounts receivables
Accounts payable
Payroll (marketing)
Manufacturing costs
Annual reports (customers, suppliers etc)
Marketing research etc

Input

Company Database
Marketing Sub-systems Files

Computer
Marketing information system programme

Output

Sales
By product,
Product line,
Customer class,
Cost centre,
Region and
Salesman

Profitability
By product,
Production,
Customer and
salesman.

Life cycle analysis
Marketing personnel analysis
Financial analysis
Credit
Discount
Distribution expenses
Promotional allowances
Market share inventories
Forecasts
Service
Customer list
New accounts, etc

Periodic automated reports

Output

Sales RECAP
Record summaries
Transaction analysis
Exception inquiry, etc.
### Exhibit 1.1
#### Support of MKIS to Marketing Mix

<table>
<thead>
<tr>
<th>Mix</th>
<th>Decision</th>
<th>Marketing Intelligence / Research</th>
<th>Internal Record</th>
<th>Decision Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>Item (Brand) decision</td>
<td>✷ Sale of existing products&lt;br&gt;✷ Consumer preferences&lt;br&gt;✷ Market growth rates and market share trends&lt;br&gt;✷ Technological advancements&lt;br&gt;✷ Govt policies</td>
<td>✷ Sale of company's products&lt;br&gt;✷ Profitability level&lt;br&gt;✷ Production cost analysis&lt;br&gt;✷ Idle capacity&lt;br&gt;✷ Request for new products</td>
<td>✷ Demand forecasting&lt;br&gt;✷ Product design&lt;br&gt;✷ Concept testing&lt;br&gt;✷ Screening models&lt;br&gt;✷ Business analysis</td>
</tr>
<tr>
<td>Price</td>
<td>Price determination on Price change</td>
<td>✷ Cost data&lt;br&gt;✷ Dealer preferences&lt;br&gt;✷ Discount structure</td>
<td>✷ Markup pricing&lt;br&gt;✷ B E Analysis&lt;br&gt;✷ Supply - demand graphs&lt;br&gt;✷ Price elasticity analysis&lt;br&gt;✷ Competitive bidding</td>
<td>✷ Price Structure&lt;br&gt;✷ Price changes</td>
</tr>
<tr>
<td>Place</td>
<td>Channel decision</td>
<td>✷ Compellor's practices&lt;br&gt;✷ Customer characteristics&lt;br&gt;✷ Environmental characteristics</td>
<td>✷ Product characteristics&lt;br&gt;✷ (standardization, perishability, bulk, service requirements, unit price)</td>
<td>✷ Channel design&lt;br&gt;✷ Distribution strategies</td>
</tr>
<tr>
<td>Dealer appointment</td>
<td></td>
<td>✷ Intermediary characteristics&lt;br&gt;✷ Financial and marketing abilities&lt;br&gt;✷ Competitor's practices, location factors</td>
<td>✷ Market coverage needed&lt;br&gt;✷ Channel members:&lt;br&gt;✷ Number and size&lt;br&gt;✷ Sales turnover</td>
<td>✷ Choice of dealers at different locations</td>
</tr>
<tr>
<td>Promotion</td>
<td>Personal selling team</td>
<td>✷ Competitors practices&lt;br&gt;✷ Market growth rate&lt;br&gt;✷ Potential market size&lt;br&gt;✷ Geographical spread</td>
<td>✷ Current market coverage&lt;br&gt;✷ Target coverage&lt;br&gt;✷ Production levels&lt;br&gt;✷ Budget</td>
<td>✷ Manpower inventory and forecast&lt;br&gt;✷ Recruitment and selection techniques&lt;br&gt;✷ Territory allocation models</td>
</tr>
<tr>
<td>Advertising</td>
<td></td>
<td>✷ Competitor's practices&lt;br&gt;✷ Consumer state (awareness, interest etc)</td>
<td>✷ Previous allocations&lt;br&gt;✷ Sales and ad expenditure data&lt;br&gt;✷ Sales force preferences</td>
<td>✷ AIDA model&lt;br&gt;✷ Promotion elasticity&lt;br&gt;✷ Ad budget models&lt;br&gt;✦ Effectiveness measures</td>
</tr>
</tbody>
</table>
### Exhibit 1.2
Support of MKIS to Marketing Decisions: Level Wise

<table>
<thead>
<tr>
<th>Level</th>
<th>Decision / Action</th>
<th>Description</th>
</tr>
</thead>
</table>
| Strategic   | • Sales trend forecasting  
• Acquisition of a company  
• Addition of new product line  
• Entry into new market  
• New organization of company  
• Consideration of new markets and new marketing strategies | • Prepare 5-year sales forecasts  
• The evaluation of current capabilities, summarized in a special way for planning use  
• Capabilities for new ventures based on current or expected developments  
• Projections of resource requirements for the alternative strategy  
• Customer analyses, competitor analyses, consumer survey information, income projection, demographic projections, and technology projections |
| Management  | • Market trend analysis  
• Pricing analysis  
• Sales region analysis  
• Selection of credit line institutions  
• Allocation of advertising  
• Comparisons of overall performance against a marketing plan | • Identify customers and markets using data on demographics, markets, consumer behavior, and trends  
• Determine prices for products and services  
• Analyze performance of sales territories  
• Analyze distribution and dealer strengths  
• Reports of advertising budgets  
• Data on customers, competitors products and sales force requirements |
| Operational | • Order processing  
• Point of sale system  
• Selection of vendor  
• Hiring of new supervisor  
• Sales orders  
• Hiring and training of the sales force | • Enter, process and track orders  
• Records sales data  
• Vendor information  
• Appointing new supervisor  
• Promotion ideas  
• The day-to-day scheduling of sales and promotion efforts and periodic analysis of sales volumes by region, product, customer, etc |
Cox and Good studied 15 major US corporations and observed the marketing information systems in operation and summarized some of the applications and probable benefits of each type of system. They are presented in Table 1.3

Table 1.3
Benefits of MKIS

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Typical Application</th>
<th>Benefits</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Control Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Control of marketing costs</td>
<td>More timely computerized reports.</td>
<td>Undesirable cost trends are spotted more quickly so that corrective action may be taken sooner.</td>
</tr>
<tr>
<td>2</td>
<td>Diagnosis of poor sales performance.</td>
<td>Flexible on-line retrieval of data.</td>
<td>Executives can ask supplementary questions of the computer to help pinpoint reasons for a sales decline and reach an action decision more quickly.</td>
</tr>
<tr>
<td>3</td>
<td>Management of fashion goods.</td>
<td>Automating spotting of problems and opportunities.</td>
<td>Fast-moving fashion items are reported daily for quick recorder and slow-moving items are also reported for fast price reductions.</td>
</tr>
<tr>
<td>4</td>
<td>Flexible promotion strategy</td>
<td>Cheaper, more detailed, and more frequent reports.</td>
<td>On-going evaluation of a promotional campaign permits reallocation of funds to areas behind target.</td>
</tr>
<tr>
<td></td>
<td><strong>Planning Systems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Forecasting</td>
<td>Automatic translation of terms and classifications between departments.</td>
<td>Survey-based forecasts of demand for complex industrial goods can be automatically translated into parts, requirements and production schedules.</td>
</tr>
<tr>
<td>2</td>
<td>Promotional planning and corporate long-range planning.</td>
<td>Systematic testing of alternative promotional plans and compatibility</td>
<td>Complex simulation models both developed and operated with the help of data bank information can be used for promotional planning by product</td>
</tr>
<tr>
<td>Plan</td>
<td>Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Credit management. Programmed executive decision rules can operate on data bank information. Credit decisions are automatically made as each order is processed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Purchasing. Detailed sales reporting permits automation of management decisions. Computers automatically re-purchase standard items on the basis of correlation of sales data with programmed decision rules.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Research System</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Advertising Strategy. Additional manipulation of data is possible when stored for computers in an un-aggregated file. Sales analysis is possible by new market segment breakdowns.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Pricing Strategy. Improved storage and retrieval capability allows new types of data to be collected and used. Systematic recording of information about past R &amp;D contract bidding situations allows improved bidding strategies.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Evaluation of advertising expenditures. Well-designed data banks permit integration and comparison of different sets of information. Advertising expenditures are compared to shipments by counts to provide information about advertising effectiveness.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Continuous experiments. Comprehensive monitoring of input and performance variables yields information when changes are made. Changes in promotional strategy by type of customer are matches against sales results on a continuous basis.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FEATURES OF MKIS

The important features of MKIS are:

1. **Functionally complete**

   Sales information system (SIS) should be comprehensive closed loop SIS providing shared, up to date information about prospects, customers, products, service issues and competitors.

2. **Querying the data (Data analysis)**

   Both predefined (standard) and custom (flexible) analysis are required in an SIS. Predefined analysis like customer, product, sales region and sales person analysis supported by graphs (time series, correlation etc.), trend analysis, ABC analysis, classification, correlation etc., and custom analysis that tailors the data to suit individual needs are essential.

3. **Reporting Features**

   Reporting features should have three levels of reporting – summary, detailed and exception.

4. **Drilling and data slicing**

   With the help of drill down function the user can see the detailed view of the data that is shown in the report thereby, varying the degree of the information being shown.

   Drill down can be characteristic drill down with regard to a characteristic for example, material, vendor, period etc.
Hierarchy drill down is with regards to hierarchy for example, product group, customer hierarchy, material, material class etc.

5. **Multidimensional database and analysis**

In a multi-dimensional database the data is stored by dimension to enable fast access to information on various summarization levels. For example, a sales analysis database may include the following dimension:

- Product group
- Geographical area
- Sales person
- Customer segment
- Department

6. **Saving and sharing information (Library functions)**

- Create and save analyses for later use.
- Use saved selections to save repetitive queries.
- Access and modify any related object at any time.
- Create standard sets of analyses, measures and groupings that all users can access.
- Distribute all analyses and selections that users create.

7. **Adhoc analysis**

What if analysis and sensitivity analysis should be supported in SIS. For example, a sales manager should be able to do the following query: how sales in a particular region will increase the commission by one percent?
8. **Exception reporting**

The early warning system allows the user to search for exceptional situations and aids in early detection and correction of undesirable situations. An exception consists of specified characteristics or characteristic values (for example, customer, material) and requirements. The following requirements can be defined:

- **Threshold value** (for example, materials / customers whose sales are greater Rs 10,000/-)
- **Trend** (for example, materials / customers with a negative trend in sales or lead times)
- **Planned / actual comparison**

9. **Support for multi-tiered distribution and service channels**

Effective team selling and service requires collaboration across diverse channels and geographies. Mobile sales persons should be able to access all systems functionally from their local computers and synchronize their local database with server database quickly and efficiently.

10. **Connectivity to enterprise applications**

Fully scaleable server-based interfaces to share large volumes of information between the sales information system and other enterprise applications including their part systems should be there.

11. **Defining sales organization structure**

In case of restructuring of the sales territories or hierarchy, the system should be able to quickly incorporate the change (updating of historical data, when organizational structures change). Moreover,
the old structure should also be kept for comparative purposes. Feature of creating virtual selling teams should also be there.

12. *Global enterprise support*

Support sales and service professionals who transact business in multiple currencies and sales and service managers who require automatic conversion of quotas and forecasts into a common currency should be there.

13. *Support personnel and virtual computing*

Support personnel computing (includes synchronization of mobile sales force data into the server data) and virtual computing (to support enterprise by uniting sales representatives, service representatives, resellers, partners and customers in a common information system) should be there.

14. *Supporting opportunities and account management functions:*

An opportunity management system (OMS) is a key component of any sales force automation system designed to attack the process side of selling. An OMS brings discipline to the sales process by requiring representatives to create a strategy (a set of steps) to close each sales opportunity in their pipeline. The system tracks the sales representative's progress against the plan providing important feedback to both the sales representative and his sales manager.
Contact management allows sales professionals to effectively manage business and personal contacts by recording and tracking all contact information, creating lists of contacts, recording all contact activity and viewing all contacts related to a specific amount or opportunity.

Activity management enables the entire sales team to enter and track opportunity - specific, account - specific, contact - specific or personal activities including phone calls, meetings and marketing events.

**CLASSIFICATION OF SALE INFORMATION SYSTEM**

Sales information systems can be classified by the kind of technology (OLTP, OLAP etc) they use and the features they support. The available sales information system packages can be classified into following three categories (Appendix - I provides vendors list).

- OLTP based SIS packages
- OLAP based SIS packages
- SFA oriented SIS packages

**OLTP BASED SIS**

- These kind of SIS packages have limited features because they exploit only online transaction processing. These packages essentially have some standard predefined sales reports and a limited option for flexible and custom analysis and user-defined queries. Vendors like SBS, t-soft, CRC infosystems, JBA etc., have OLTP based sales information system packages. These packages
provide analysis of current and past sales transactions. The predicted standard reports supported by these software packages include:

- Item sales report by customer
- Item sales report by territory
- Customer sales report by item
- Item sales report by salesperson
- Six month item sales summary
- Item by customer comparative
- Customer by item comparative
- Top 20 sales (YTD Sales)
- Top 20 items (YTD volume)
- Top 20 salespersons (YTD Volume)
- Top 20 customers (YTD profit)

On these summary reports limited drill down options are also available.

**OLAP Based SIS**

But OLTP based SIS packages have limited use because it is not possible to do flexible analysis on sales data with OLTP technology.

Sales executives and managers prefer an easy to use, highly visualized system providing access to the information, the need to perform their daily work. The end user interface should support:

- Multidimensional analysis
- Graphical and tabular presentation of data
- Drill down to underlying details
- Exception reporting
Pre-defined reporting templates for easy to use graphs
Shared text commenting
What if analysis
Slide show presentations of frequently used information
Production of print-outs for presentation purposes.

The top level sales planners and analysts need additional functionality
Adhoc graph and report design
Distribution of new graphs and reports to end users
Retroactive updating of historical data, when organizational structures change.

All these are not possible with OLTP based sales information systems. Therefore the SIS vendors have moved towards OLAP based packages, which supports multidimensional analysis on sales data. These SIS packages make use of multidimensional databases to rapidly manipulate and query large volumes of information quickly and easily.

The key characteristic features of OLAP based SIS are:
Shared data
Consolidated data
Fast, flexible access
Analytical modeling and profitability calculations
Multi user read / write access
**Sales Force Automation Packages**

The next level in the classification of sales information system is higher end sales information systems which are a part of sale force automation systems. Transition of sales information system to a sales force automation system require following additional features.

*Opportunity management system*

An opportunity management system (oms) is a key component of any sales system designed to attack the process side of selling. An OMS brings discipline to the sales process by requiring representatives to create a strategy (a set of steps) to close each sales opportunity in their pipeline. The system tracks sales representative's progress against the plan, providing important feedback to both the sales manager and the sales representative.

*Sales configuration systems*

These help companies put together accurate orders by configuring products, pricing and financing in conjunction with each other.

*Marketing encyclopedia systems*

This system maintains repositories of all marketing information including product literature and pricing. Sales reps can even call up videos of reference accounts to pitch products to potential customers. They provide, a repository of the organization's sales-related information, including complete product information, competitive information deciding support and online literature.
Sales management (account / contact management) system

These provide traditional account management so that companies can keep track of data in a variety of ways.

Account management and profile feature enables service profession to manage all service related information such as company names, designated service contacts, type of service level agreement, service calendar and product owned by the customer.

Contact Management allows service professional to efficiently manage service events associated with given individuals, including historical lists of prior service requests associated with those contacts.

Activity Management allows multiple services professional to work as a team by allowing users to create, assign and trace all activities against a service request.

Team Sales solutions consist of telemarketing and filed sales integration tools, while low end sales configuration software supports rapid order entry.

SAP Sales Information System

The sales information system is a part of Logistic Information System (LIS) which exploits open information warehouse concept. On an application level, the LIS is a component of the SAP open information warehouse. Also belonging to this application level are the Finance Information System (FIS) and the Human Resources Information system (HRIS). The Executive Information System (EIS) is also included on a cross-application level.

The aim of the open information warehouse is to integrate the data of various Information systems. The user can select various views and
aggregation levels for the data. In the open information warehouse, important information is stored in separate databases parallel to the operative systems (purchasing, inventory controlling, shop floor, sales, etc). Data from the operative system is thus converted into informative key figures that aid the decision making process. In this way, the business process of the operative systems (for example, goods receipt, purchase order, billing document, notification) form the data basis for the open information warehouse.

**Oracle Sales Analyzer**

Oracle sales analyzer is a full range of tools for Online Analytical Processing (OLAP) of corporate data. The system combines a central, integrated information source with powerful analytics so that users can evaluate trends in diverse areas, including sales, manufacturing, distribution and marketing. Oracle sales analyzer is a general purpose application for analyzing sales, marketing or similar data. Sales trends, marketing campaigns, product or customer profitability, product life cycles, and promotional effectiveness can be evaluated with the product. When evaluations are complete, the system helps users to adjust their strategies through custom analysis.

- Analyzing with marketing know-how
- Reporting to rank performance and find exceptions
- Drilling into details
  - Querying data flexibly
  - Querying data naturally
- Creating custom measures
- Analyzing promotion response
SAP Sales Force Automation Software (SAPSFA)

The SAP – SFA solution uses several integral business components that help sales professionals move quickly and easily through the sales process during customer interaction and back in the office. It is a powerful collaborative tool that synchronizes the communication and activities of sales representatives, managers, and selling teams with other departmental functions within the enterprise. Listed below are the major business components planned to be integrated into SAP's sales force automation application:

- Customer / prospect management
- Contact management
- Activity management
- Calendar
- Opportunity management
- Order management
- Quotations
- Marketing encyclopedia
- Sales pricing engine
- Sales configuration engine
- Promotions / campaigns
- Customer agreement
- Inbox, outbox, email
- General functionality

Oracle Sales Force Automation Software

Oracle applications for sales force automation include:
IT SPENDING IN INDIA

Indian companies are computerizing their information systems to gain competitive edge. Wayback in 1996, "Data Quest" reported that on an average, Indian companies had spent 0.75% of their revenues on IT. Multinational corporations in the country spent as much as 2-3 percent of their net revenues on IT.

Table 1.4 shows the enterprise IT spends variations over the previous years.

Table 1.4
Enterprise IT Spend (Growth Rates)

<table>
<thead>
<tr>
<th>Sector</th>
<th>2000-01</th>
<th>2001-02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Industry</td>
<td>1*</td>
<td>69</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>12*</td>
<td>66</td>
</tr>
<tr>
<td>IT Companies</td>
<td>30*</td>
<td>14*</td>
</tr>
<tr>
<td>Finance</td>
<td>3*</td>
<td>42</td>
</tr>
<tr>
<td>Services</td>
<td>28</td>
<td>189</td>
</tr>
<tr>
<td>Insurance</td>
<td>73</td>
<td>161</td>
</tr>
<tr>
<td>Overall</td>
<td>23*</td>
<td>56</td>
</tr>
</tbody>
</table>

*Fall
Source: Data Quest, November 30, 2001, p 58

While the fiscal (2001) is on the downside with 23% fall in IT spending since last year, IT spending is expected to move up over 50% by the end of the next fiscal. Chief Information Officers (CIOs) across segments other than IT, are optimistic about their IT spending and are
rolling out their projects and meeting IT requirements with their planned investments.

When we consider the ratios, insurance companies lead the pack with 2.49% of its revenue going to IT spend. Next to them are IT companies with 1.60 per cent. IT spend per employee is the highest in IT companies being 0.29 lakhs with 1 PC per employee. Table 1.5 shows the details.

Table 1.5 Using IT: Insurance Leads the Pack

<table>
<thead>
<tr>
<th>Sector</th>
<th>Employees Per PC</th>
<th>IT Spend Per Employee (Rs Lakh)</th>
<th>IT Spend (% of Revenues)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto</td>
<td>6</td>
<td>0.10</td>
<td>0.50</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>15</td>
<td>0.07</td>
<td>0.15</td>
</tr>
<tr>
<td>IT Companies</td>
<td>1</td>
<td>0.95</td>
<td>1.60</td>
</tr>
<tr>
<td>Finance</td>
<td>6</td>
<td>0.17</td>
<td>0.09</td>
</tr>
<tr>
<td>Services</td>
<td>6</td>
<td>0.16</td>
<td>0.24</td>
</tr>
<tr>
<td>Insurance</td>
<td>3</td>
<td>0.29</td>
<td>2.49</td>
</tr>
<tr>
<td>Others</td>
<td>40</td>
<td>0.03</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Source: Quest, November 30, 2001, p 73

IT: State of the Art and Benefits

How the Indian companies have taken IT initiatives and benefited from them? Here are some examples that make the point clear.

Asian Paints is India's largest paint company today. It has a turnover of Rs. 1,490 crore and an enviable reputation in the Indian corporate world for professionalism, fast track growth, building shareholder equity and dealer networking. This market leader in the decorative and industrial paints segment has had a colorful tryst with Infotech. The company went on to deploy sophisticated supply chain management (SCM) solutions even before it implemented an ERP application. Driving out locked up cash in inventory was a strategy to achieve cost leadership and implementing an
SCM was the only way to fulfill this goal. Asian paints went in for Rhythm—an i2 Technologies SCM solution, now called Trade Matrix. The entire capital expenditure and asset management system is available online, which helps budgeting and management control processes. The information subsystem also serves the other application areas that the company has put up—call centers, CRM, e-business, and a collaborative initiatives based on technology include administration, office automation, knowledge management and online training.

Bharat Petroleum with a turnover exceeding $8 billion, Bharat Petroleum Corporation (BPCL) is the only Indian petroleum company to be listed in the Forbes’ International 800 ranking. BPCL has used information technology (IT) as an enabler to establish a leadership position in their industry. BPCL has 4,500 petrol pumps, 1000 kerosene dealers and 1,400 LPG distributors. The company also supplies fuel directly to hundreds of industries and several international and domestic airlines. BPCL uses the Internet to reduce turnaround time besides expanding its customer base. Dr. Anand Teltumbde, GM-IS, BPCL, says, “Online Banks streamline the e-payment mechanism and over 90% of customer transactions could take place through the e-Business system”.

Hero Honda: About three years ago, an information systems plan was drawn up even before the implementation of the new home grown systems to replace the legacy systems and an ERP package, the information technologists at Hero Honda made a conscious effort to improve the networking. They installed structured LAN systems and WAN links and
introduced e-mail throughout the organization. "Real-time communication was a long felt need and usage of e-mail spread like wild fire," says Hero Honda’s Vice-President (IT). This was followed up the installation of an intranet and workflow applications. There was a surge in the demand for PCs and employees were eager to be a part of the network. The entire staff got used to the electronic form of communication and this change in work culture made using SAP easier.

Kirtoskar Oil Engines Limited (KOEL): The contribution of IT to achieve business success is 15%, said Deshmukh. The company operated on a Burroughs mainframe earlier. Upgradations were a costly affair and therefore KOEL decided to switch to an open platform. A serious IT initiative began in 1998 with the implementation of Oracle’s Enterprise Solutions followed by the e-Business initiative in 1999. Today, about 70-80% of business comes from dealers connected electronically. The company now has around 150 suppliers, 35 depots and 600 dealers.

The cost saving is not just in terms of money alone, but has ensured that the company is in a position to connect with dealers, suppliers and others in the chain. For instance, the order registration process, which would take 10 days earlier is now completed in minutes. There was laborious paper work involved. More than six documents had to be completed before the order could be registered. Now there are none. KOEL has eliminated its raw material store house and now works on the principle of just-in-time.

S Gopalakrishnan, Managing Partner of the Coimbatore–based Electro Controls is very happy with the IT implementation at KOEL. "Now
we are able to get all the information on the web. We can register our orders straight on the web. Moreover, financial dealings are now transparent," he says. The firm has seen a 50% cut in telephone bills.

S Chandrashekeran, Managing Partner, Network Diesel, Madurai agrees that the time saving has been tremendous. Expenditure has been pruned by 35%. Meanwhile, all operations at KOEL are IT networked through Yantra, its extranet for suppliers, dealers and product life-cycle management.

Maruti Udyog: Maruti's success can be attributed to its web-enabled supply chains. Using a combination of software from Oracle and Computer Associates, the company built a variety of applications that facilitated its business.

This homegrown system was extended to its sales and dealer network through an e-mail-based ordering system with about 250 outlets. For instance, if a dealer has to place an order, he generates it in his own machine with all the specifications (e.g., color, model, etc.) and sends it through an e-mail to Maruti. The system there automatically checks it to the respective database. In order to standardize the data, the company has provided the software to all its dealers. Even the suppliers are being gradually brought online.

For a mass production player like Maruti, an e-enabled supply chain has been extremely instrumental in inventory management, both at the dealer level and in the company. Reduction in paperwork has increased
efficiency and the speed of processing orders and improved working capital management

SAMSUNG: Being a technology company, Samsung was in a better position to set up an online business for itself. Fortunately, its six main distributors are all large IT companies such as Ingram Micro, Redington and Tech Pacific, which are already web enabled. These distributors, which are in turn linked to several dealers, are also responsible for providing dealer information and updating the database regularly. This e-enabled environment has helped Samsung set up an online B2B model. The internal ERP has been extended to the supply chain and all transactions are online. Without an online operation, it would have been impossible for 24 people to manage transactions with such a huge dealer network. Moreover, the company estimates a huge turnover of Rs 1105 crore this year, up from Rs. 740 crore recorded last year. A number of routine inquiries and transactions which do not need management decision can be tackled without any physical interaction. This not only allows efficient resource allocation with low manpower but also cuts down inventory costs.

Benefits

A survey of opinions of effect on IT spending by Data Quest (1996) indicates positive benefits in terms of speed of transactions, increase in velocity of business, improvements in factor productivity and efficiency, better access to information cost reduction, effective marketing and higher customer satisfaction (Table 1.6).
Table 1.6

Effect of IT on Various Functions of Business Organizations

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Features</th>
<th>Figures in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Increasing the speed of transaction and velocity of Business.</td>
<td>23.50</td>
</tr>
<tr>
<td>2</td>
<td>Increasing Factor productivity in all areas of business</td>
<td>21.00</td>
</tr>
<tr>
<td>3</td>
<td>Improving internal efficiency of business processes</td>
<td>20.00</td>
</tr>
<tr>
<td>4</td>
<td>Providing better access to information and thus helped</td>
<td>13.00</td>
</tr>
<tr>
<td></td>
<td>individual performance</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Making our customer happier</td>
<td>9.50</td>
</tr>
<tr>
<td>6</td>
<td>Reducing direct cost</td>
<td>8.00</td>
</tr>
<tr>
<td>7</td>
<td>Providing an advantage in marketing and sales</td>
<td>5.00</td>
</tr>
</tbody>
</table>

Source: *Data Quest*, May 15, 1996.

RESEARCH PROBLEM

In the light of the above exposition, which explained the concept and components of MKIS, examined IT initiatives of the Indian companies with few case studies and enumerated the available benefits. Some pertinent questions can be:

➢ What is the state of the art of marketing information systems in the Indian organizations?

➢ How well are they performing?

➢ Do they need improvements? If yes, what kind of measures are needed?

PLAN OF THE THESIS

Chapter 1 presents a conceptual framework and growth of MKIS in India and identifies the research problem.

Chapter 2 makes a survey of literature and establishes objectives and methodology for the present study.

Chapter 3, 4 and 5 describe and evaluate MKIS in select organizations in the Core, Chemicals and Services sectors respectively.

Chapter 6 summarizes the findings and highlights the suggestions for improving MKIS.
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