A Study of Marketing Information System with Special Reference to Central Electronics Ltd.

Dissertation submitted in partial fulfilment of the requirements for the degree of Master of Business Administration

By

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1981
Certified that the dissertation entitled "A Study of Marketing Information System with Special Reference to Central Electronics Ltd." has been completed by Mr. Sudhir Kumar under my supervision and guidance.

To the best of my knowledge this has not been submitted for the award of any other degree in this University or anywhere else. I am satisfied with the efforts made by Mr. Sudhir Kumar in this regard.

(S.M. OZAIR)
SUPERVISOR
The thoughtful consideration and suggestions by colleagues, teachers, and marketing executives of Central Electronic Systems have been most welcome. In particular the information provided by Mr. D. Gupta, Marketing Officer, and Mr. C. Jaisingh, System Officer, has been very helpful for the presentation of this project.

I shall be failing in my duty if I do not acknowledge my profound sense of gratitude to my esteemed teacher, Mr. D. Gupta. The skill, patience and perseverance of Mr. A. Sir in typing the manuscript have also played a vital role in bringing this project to a successful conclusion.

Sudhir Kumar
On any working day, executives and managers of business firms throughout our country are making thousands of decisions affecting their firm's market action in some way. Some decisions might be having great influence on the firm's success, like entering into a new line. Others may be important but less crucial, like giving some discount to a customer.

For effective decisions, they must be based on fact. Marketing information system is a systematic, organised set of integrated procedures designed in a firm to provide right information to the right man in right form at the right time and place.

The aim of this project is to study the need for MIS, its characteristics, benefits, design etc. An attempt has been made to study the existing market prevalent in Central Electronics Limited. Some suggestions for the removal of short comings are suggested and a proposed marketing information system, with the facilities available in the company is designed.

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PROPOSED MARKETING INFORMATION SYSTEM

ANNEXURE
In business, information is more important than money. The right information given to the right people at the right time can increase sales, reduce costs, produce new products, secure new financing, obtain government approval, or resolve employee conflicts.

Quite often in India, management information is randomly generated, untimely transmitted and poorly utilised. It is churned out by clerks and computers in a meaningless mass of figures and symbols to be cyclostyled, printed and circulated endlessly. Thus all that is really achieved is a collection of massive volumes of what may be called "non-information". Marketing executives regard success in the field, to be rooted in art. Decisions are based upon past experience or else intuition, upon guess, estimate or hunch.

With a rapid expansion in size and complexity of the company's operations and resulting decision variables to be evaluated, the decision making process has changed from an art to a science. On the one hand, the firm is involved in too many products and broader markets than ever before; its competitors are able to move swifly and environment of surrounding laws,
technology, economy and culture is undergoing fast changes. On one hand marketing executives are getting information too late, to be useful. Consequently executives find themselves handicapped by not having first hand contact with the marketing actions and they have to rely on the second hand information.

According to Hargre Horper "To manage a business well is to manage its future; and to manage its future is to manage information".

There is an urgent need, therefore to maximise the overall utility of information. The role of information in management systems need to be examined systematically and ways and means of putting the right information to productive use must be found out.

While on management orientation training at marketing division of Central Electronics Limited, the author felt that there were some basic shortcomings in their existing marketing information system and should be redesigned. The problems like, not getting proper sales response, the stock of finished goods inventory is continuously increasing, no useful data for forecasting demand, the format of selling is different from executive to executive, only the concerned executive knows about his clients, delay in information, distorted and misinformation, not proper use of resources like computer.
The organisation is having a medium size Computer of 'The Hindustan Computers Limited'. Computer serves best at the operational level of decision making, where a large volume of structured and quantitative data are to be disseminated routinely.

Business executives, current and future, need an understanding of the systems that can provide the right informations at the right time. Modern electronics makes it possible to develop systems that can store, process and communicate data in any manner desired, thus computer and similar devices are an asset to the executives in the decision making process.

Certain shortcomings are being felt in the present marketing information system of the company by the concerned executives and the methods of their removal is the subject of this study. The entire study is divided in six chapters. In the first three chapters the discussion is on existing marketing information system of the Company and the science of marketing information system. Chapter four is dedicated for the discussion of Computer Aided Design of Harris. Some recommendations for the removal of above mentioned shortcomings are suggested in the fifth chapter. Finally free from all shortcomings a new marketing information system has been designed in the sixth chapter.
Every firm is the scene of several information flows affecting marketing management. Each firm has made some arrangements to take these flows. These arrangements constitute the firm's marketing information system.

Smith, Rechard, Brien, and Stafford, in their readings in 'Marketing Information System', have defined it as under:

"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 sources for use as the basis for decision making in specified responsibility areas of marketing management."

The main ingredients of a total marketing information system which are shown to stand between the environment and the marketing executive user. There is marketing data from the environment to the marketing information system of the company. The marketing information system turns this data flow into a marketing information flow that goes to its executives on the basis of this information; the executives develop plans and programs
which enter into a marketing communication flow that goes back to the environment. The flow consists of four subsystems for gathering, processing and utilising environment data.

**First**, these in the internal accounting system whose task is to supply executives with measures of current activity and sales performance, sales, costs, inventories, cash flows, account receivables, and so on. Marketing executives have a particular need for current and past sales data and cost information broken down by product, region and salesmen.

**Secondly**, there is the marketing intelligence system, which comprises the procedures used by the company to keep abstract developments in the environment and disseminate them to the proper executives. The centralised marketing intelligence services have a great deal to offer executives beyond what they can gather on their own.

**Third**, is the marketing research system, whose task is to gather, evaluate and report specific information needed by executives for decision making and problem solving e.g. market survey, consumer preference tests, advertising evaluation and so on.

**Fourthly**, there is marketing management science system which assists marketing executives in analysing complex marketing problems and operations with a view to improving
Information Flow

Marketing Research System

Marketing Data Flow

- Marketing Intelligence System
- Dissemination
- Alerting
- Evaluation
- Decoding

Information Processing

Internal Storage and Retrieval

Systems Utilising

Marketing Executives

Planning

Execution

Control

- Marketing Information Flow
or optimising them. It may be appropriate to point out that a large number of companies do not have any marketing management science system shown in figure.

(C) CHARACTERISTICS OF MAIS

The MAIS is a carefully developed master plan for information, with explicit objectives, and is to be found in the formal organisation, such information systems will not appear suddenly within an organisation, nor will information techniques allow be responsible for this development. It involves a structured interacting complex of persons, machines and procedures.

The general model of a marketing information system is a feedback system evolving certain type of major data flows within the firm, and between the company and its environment. Unlike such functional areas as production and accounting, many vital sources of information in marketing are external to the firm, and therefore noncontrollable. In the case of marketing, vigilance is placed on marketing intelligence and feedback. The marketing executive is remote from the market and therefore needs reports on such matters as the positions and the effectiveness of his sales resistance they are encountering and the activities of the competitors.
Further, marketing information varies in its availability to the firm. Information about general characteristics such as number of buyers or their geographical dispersion, is easily obtained. Usually, this data is either published or can be obtained relatively from secondary sources. Information about present and potential customer preferences and attitude, is, however, more difficult to acquire. In most instances, it may have to be gathered as primary data, and its value considered in relation to its cost.

Major problem situations in marketing deserve information-based decision making. Major marketing problems have two characteristics.

1. They arrive at irregular intervals—so decision on when do not have to be made frequently.
2. They have important consequences which must be kept for a long time as it is extremely difficult and awkward to change such decision once they are made.

Examples of major marketing problems include those involving the introduction of new products, opening up new markets changing the base structure of sales organisation, choosing marketing channels, or determining the types and amounts of personnel selling and advertising and other elements in 'promotion mixes'. Because decisions
on such matters as critical to marketing success, they should be reached only through analysis of relevant information. Their possible consequences are of such high and far reaching importance that a marketing executive should not take risk of making them intuitively. He should take whatever steps on necessary to ensure the availability of sufficient marketing information to permit information based decisions on all major marketing problems without a well managed information system, there are several problems within an s. i.e. They are -

(a) **Information Disappearance**

The salesmen may forget to relay needed information, may not know who can use it or may purposely suppress it for personnel reasons.

(b) **Information Delay**

Intelligence takes longer time than necessary to travel from the original relay point to the decision centre.

(c) **Information Distortion**

May time message becomes distorted in the process of being transmitted and decoded.

One reason for the need of **DIS** is the apparent financial neglect of certain main areas within the firm's marketing programme. Some marketing functions have been worked near the bottom of the company's list of concentrates short, i.e. in fact, their huge costs measured as
a percentage of total sales, would come out near the top. Such instances show the exact nature of the need for M&RIS in marketing.

(e) **BENEFITS OF M&RIS**

(1) **New Product Development and M&RIS**

New product development is considerably more time consuming than any marketing executives realise. The question, therefore, to be asked is how can time allocations be made effectively more realistic? Information on consumer wants and needs may flow into the research department from the company's market environment. Information on new ways to fill those wants may then flow out of the research area. In turn, feedback information concerning the potential of new products towards filling customer wants may flow back to the research department.

(2) **Marketing Intelligence and M&RIS**

In the past, the problem of business executives was not how to deal with a great amount of information, rather it has been has to obtain a minimum amount of data, enough to make reasonable good decisions. Today, by contrast, the business manager feels overwhelmed by the many facts, figures and surveys that pile up on his desk. To make matters worse the firm is generating such quantities of operating data studies and reports that he finds it virtually impossible to read, let alone analyse them.
Same of the reasons for having marketing intelligence services are:

- Expansion of time horizons
- Reduced confusion of top policy makers
- Prevention of distortion of information.

(3) Planning and Control Needs

Planning is becoming an increased professionalised aspect of management. Rather it can be said that the most basic management function is planning, the selection from among alternatives of future courses of action for the enterprise as whole and each department within it. Planning aims at clarifying the objective of management and the formalisation of methods by which these can be obtained. However, marketing planning can be effective. Only if it is supplemented by control system to ensure that the goals are being pursued at all times with the best possible programme. Control implies measurement of accomplishments against the standard and the correction of deviations to assure attainment of objectives according to plan.

Marketing information system is an essential prerequisite of marketing planning and control. The enclosed section shows the benefits which marketing planning and control can make with proper marketing information systems.
## Typical Applications

### A. Planning Systems

<table>
<thead>
<tr>
<th>Application</th>
<th>Benefits</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Forecasting</strong></td>
<td>Automatic translation of terms and classifications between departments.</td>
<td>Survey-based forecast of demand for complex industrial plan can be automatically translated into parts required and production schedules.</td>
</tr>
<tr>
<td><strong>2. Promotional planning and Corporate long range planning.</strong></td>
<td>Systematic testing of alternative promotional plans and compatibility testing of various divisional plans.</td>
<td>Complex simulation model both developed and operate with the help of data back information can be used for promotional planning by product managers and for strategic planning for top management.</td>
</tr>
<tr>
<td><strong>3. Credit Management</strong></td>
<td>Programed executive decision rules cooperate on data bank information.</td>
<td>Credit divisions are automatically made as each other is processed.</td>
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- **Credit Management**:  
  - Programed executive decision rules cooperate on data bank information.  
  - Credit divisions are automatically made as each other is processed.

- **Purchasing**:  
  - Detailed sales reporting permits repurchases standard automation of management decisions.  
  - Computer automatically data with programmed decision rules.
<table>
<thead>
<tr>
<th>Typical Applications</th>
<th>Benefits</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Control of market</td>
<td>Make a timely</td>
<td>Undesirable cost trends or spotted more quickly so that corrective action may be taken sooner.</td>
</tr>
<tr>
<td></td>
<td>computerised report.</td>
<td></td>
</tr>
<tr>
<td>2. Diagnosis of poor sales performance</td>
<td>Flexible on live 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. Management of fashion goods</td>
<td>Automatic spotting of problems and opportunities.</td>
<td>Fast-moving fashion items are reported daily for quick re-order, and slow moving items are also reported for fast price reductions.</td>
</tr>
<tr>
<td>4. 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 targets.</td>
</tr>
</tbody>
</table>
Executives play a great variety of information acquisition styles. An executive’s information style is the orientation that he has towards collecting information. Information designers are beginning to discover the following things about executive information styles.

1. Executives vary greatly in their preferred source of information.
2. Executives vary greatly in their appetite for information.
3. Executives vary greatly in their information gathering efficiency.
4. Executives vary greatly in their critical acceptance of information.
5. An executive’s interest in information acquisition will vary in different periods.

A cross section of executives should be interviewed to find out their information wants. A useful set of questions can be as under.

1. What type of decisions are you regularly called upon to make?
2. What type of information do you need to make these decisions?
3. What information do you regularly get?
4. What type of information would you like to get that you are not getting now?
(5) What information would you want daily? weekly? monthly?

(6) What magazines and trade reports would you like to see?

(7) What specific topics would you like to be informed?

However it may be noted that many executives will be too busy to give the questionnaire serious thought. That is why the information planning personnel should determine what executives should know to be able to make responsible decisions.

**Steps in MALLS**

The steps in the design of MALLS are:

(1) How should we organise to develop a better MALLS?

(2) How sophisticated should our MALLS be?

(3) What development strategy should be followed? Do we attempt to build a total system in one move or in stages?

(4) How much should we spend on development and operating an MALLS?

While the field is too new to permit comprehensive and conclusive statements about all the aspects, we can present some guidelines and working hypothesis that are worthy of management's consideration.
The starting point in organizing for new development is not the establishment of marketing systems group. The starting point is a review and appraisal of the entire marketing organization and of the policies that direct it.

Some companies, for instance, have failed to decide whether a product manager is accountable for sales and marketing share, for sales revenues for marketing profits, or for net profits. Until responsibilities and the specifier of activity are clearly defined, it is virtually impossible to build a marketing control system. In fact, specification of who is accountable for what authority, automatically determines many of the control systems characteristics.

Next step is to devise how to organize new development activities. This is under complex problem that might be assumed. Sophisticated computer based systems require the coordinated efforts of man departments and individuals including.

i) Top management.

ii) Marketing management - Brand management
   - Sales
   - New products group
   - Market research personnel.

iii) Control and finance departments.
iv) System analysts and designers.

v) Programmers

vi) Computer equipment experts.

**APPROACHES TO HERALD REALISM**

The approaches which have been tried in an attempt to solve the problems of organisation and leadership can be characterised as:

i) **Clean Piece of Paper Approach**

This involves drawing of a new organisation chart. The argument goes that the financial and accounting department and market research departments have developed as much from growing data gathering and processing capability as in response to management needs. In the precomputer age, it was rarely possible to correlate marketing and accounting data in a sophisticated manner and on a regular basis for presentation to management. In the absence of coordination and compatibility line management must often do its own correlating. However, the ideal procedure is to abolish the traditional information gathering and processing departments and establish a management information department.

ii) **Committee Approach**

Some companies have established such committees. They are excellent vehicles for communicating point of view and for developing point of view. They can create
shared awareness of compatibility and coordination problems and of the need to resolve them.

In committee approach alone, however, is not the answer, because meeting and committee assignments consume time, it is difficult to involve busy line managers.

iii) Low-Level Approach.

Some Companies have assigned the task of MAIB development to Junior member of the market research development often as a part-time assignment.

This reflects a total lack of understanding of the difficulty of the task and the outcome is predictable. No matter how clever be is, lacks the time and douts the overcome. The organisation and psychological barrier the encounter.

iv) Information Coordinator Approach

Some Companies while remaining traditional department boundaries, have appointed a top level executive to the post of information coordinator sometimes director of marketing systems. Men who are capable of understanding both management information needs and systems problems can make substantial progress in MAIB development in this position, when they enjoy top management support.

For many companies, this approach has the best chance of success. We suggest that management designate the director of marketing systems as a prime contractor, who develops need scope and specifications.
2. **HOW SOPHISTICATED**

Some are must decide on the level of sophistication of the **MIS** to be developed. This decision should of course be based on a revised of the company needs and the costs of meeting them.

Equally important the abilities of the managers, must be considered. To must be able to.

i) Define specific information needs.

ii) Develop analytical approach and model.

iii) Make explicit their planning, decision making and control processes and procedures.

iv) Interrect and use sophisticated information.

One of the characteristic of the more advanced **MIS** is automation of certain aspects of the marketing management process. But it is first necessary to make the process explicit. For instance, to develop exception, reporting systems, manager's exception and control criteria must be calculated. Simulation models can be built in to the systems until managers have spelled out the characteristic of the different elements of the company's marketing system (consumers, distributors and so forth) and have attempted to define how these elements interact.

3. **COMPLETE SYSTEMS**

While an attempt to develop a highly sophisticated total marketing system at the outset has highly probability of failure, it is desirable to build a complete
A company develops a first-rate exception reporting system that will quickly present exceptional sales results to the marketing manager. Very likely he will be faced with more problems than ever before because of the system ability to monitor large amounts of detailed information. It will be difficult (and dangerous) however, for the manager to act on this information. Before he can take intelligence action, he must also know whether the deviation from plan is due to the result of deviation in the sales effort, of unusual competitive activities, or of the other factors. To be complete, therefore, the system must also include a diagnostic procedure.

4. Cost and Value of Data

It is difficult to generalise about how much an effective system will cost and how much will it worth. Usually, these increases in data gathering costs, since many companies now have available. Then much of the raw data required. Cost increases result from data storage and transforming the useful information.

One the one extreme, a simple or partial system may cost only a few thousand rupees. On the other extreme, one complete system may cost several lakhs of rupees. For any expenditure, management would want a justification of the
value of the system. Usually computer based information system, such as those used for accounts, have been justified on the ground that they reduce personnel used, and other administrative costs. Few advanced marketing information systems could be justified on the basis of cost reduction. An MDIS should be evaluated in terms of its estimated effect on marketing effectiveness.

Determining how much an MDIS could increase marketing effectiveness is not an easily task. The improvement of management in overall specifications should help in making an estimate, however, inexact is system benefits.
Central Electronics Limited, a Government of India Department of Science and Technology Enterprise, has commercialised a number of sophisticated and high-technological electronic components and systems thus contributing towards self-reliance in electronic industry in India, through its own Research and Development efforts as well as know-how available from various National Research Organisations. Central Electronics Limited is an organization engaged in activity relating to Research and Development and Engineering development of renewable sources of energy with the aim of Commercialisation.

Central Electronics Limited was incorporated on 26th June, 1974 as India's seventh public sector undertaking in the field of sophisticated electronic components and systems and is the second public sector venture with a motto to productionise electronic items based on indigenous know-how and technology. The Company was set up with an authorised capital of Rs. 50 million. The factory is located at Sahibabad on the outskirts of Delhi over 50 acres of land.
(PZ) PRODUCTS

Professional Ferrites

High permeability and excellent time/temperature stability have made ferrites the best choice in quality filter circuits, high frequency transformers, wide band transformers, adjustable inductances, delay lines and other high frequency electronic circuits. These are available in various sizes and shapes.

- Pot cores and HI cores
- Toroids
- E & I Cores
- U cores
- Yoke Ring cores

Electronic Ceramics

Ceramic capacitors are available in various ranges for different applications such as fluorescent tube starters, radio, television, electronic circuitry etc.

The major advantage of piezoelectric ceramics is that they have a high electrical to mechanical (or vice-versa) conversion efficiency which makes them versatile material for transducer applications. They are available for low and high power applications.

Product Range

Circular disc upto 50 mm dia, frequency disc upto 10 mm; square plate, cylinders and rings; PZT cartridges are also available.
Two major grades of Alumina products have been developed and productionised for high temperature, high-vacuum and high-voltage low-loss application: CELAL-B (96% - Al₂O₃) and CELAL-C (86% - Al₂O₃).

Cermet Trimmer Base Heat sink for power transistors, LDR base combustion boats for high temperature analytical work, tubes and rods 3 mm to 25 mm dia, crucibles for high temperature application (20 to 200 ml. capacity).

Display Products

The liquid crystal display and light emitting diodes are preferred over conventional analogue displays or other types of high-power consuming digital displays. The major advantages of these display devices are that they have low power drain, CIOS compatibility, excellent contrast, wide viewing angle, hermetic packaging etc. These devices are used for a variety of applications, such as for clocks, watches, multimeters, digital instruments etc.

Product Range

<table>
<thead>
<tr>
<th>LED Lamp</th>
<th>Red &amp; Green</th>
<th>3 mm and 5 mm dia</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED digit</td>
<td>Single digit</td>
<td>13 mm characterheight</td>
</tr>
<tr>
<td>LED digit</td>
<td>3/2 digit</td>
<td>13 mm characterheight</td>
</tr>
<tr>
<td>LCD display</td>
<td>3/2 digit, 4 digit</td>
<td>13 mm/ 8 mm characterheight</td>
</tr>
</tbody>
</table>
Audio visual systems

For effective display and information dissemination, audio visual systems are ideally suited. They have variety of applications such as for exhibitions, fairs, advertising and sales promotion, training and educational programmes, etc. CML is manufacturing various types of such systems for these applications.

Slide Projector

The auto slide projector AP 100 has facilities for manual, remote and automatic operations of changing the slides and reverting the direction of movement of slide carriers (Rotary and linear both type carriers) with auto focussing facility. It can be used with synchroniser and dissolve system to make complete audio visual system.

AVS 40

The system AVS 40 consists of CML auto slide projector, AP 100, synchroniser SU-170, mono/stereo tape recorder, microphone, speaker and other accessories. The prerecorded programme, synchronised for the audio commentary, with the 5 kHz frequency command signal to trigger the projector, is played on the tape recorder and the synchronising unit passes audio and command signals to the speaker and projector respectively. This gives an effective audio-visual information display.
A¥b 41

System A¥b 41 provides a continuous projection effect using two slide projectors A¥ 100, synchronizing unit A¥ 170 and the dissolve unit A¥ 171. The dissolve unit controls the triggering and illumination of the two projectors alternatively and a continuous projection effect of the slides is visible on the screen. The time interval for slide changing and overlapping of the consecutive slides can also be controlled.

High Intensity Monochromator A¥ 104

High intensity monochromator A¥ 104 has the advantage of high resolution and linear dispersion. Together with its large aperture, it becomes a versatile instrument for emission, absorption, transmission and fluorescent spectroscopy. With a motor attachment, it can be made a useful scanning spectrometer useful in spectroscopic experiments.

It has a large aperture ratio, high light output, high resolution, interchangeable slits. It is useful for application as a monochromatic source in spectroscopic measurements etc.

Nitrogen Laser A¥ 103 is a source of high power pulsed ultraviolet radiation. It finds applications for spectroscopic, fluorescence Raman effect, life time
measurement, photochemistry, low altitude ranging, dye laser pumping etc.

System HLS 20 consists of the nitrogen laser NL 103, power supply Pb 102 and it requires vacuum pump of 200 LPM capacity and commercial nitrogen for consumption.

Dye Laser

A nitrogen laser pumped Dye Laser has output wavelength tunable over the entire visible region using a series of dyes. It is highly useful in Laser spectroscopy, laser isotope separation etc. The system is under development.

Carbon Dioxide Laser

Carbon dioxide laser gives a continuous output in the infrared wavelength, using continuous flowing mixtures of nitrogen, helium and carbon dioxide. It has also provision for Q-switching to obtain pulsed trains of few kilowatts peak power and several microsecond pulse width. To obtain different rotational lines it can be tuned using an interference grating element. The power of present system is 30 watts without helium and 150 watts with helium. It has applications in spectroscopy, photochemistry, Laser isotope separation, industrial applications such as drilling, cutting, melting of plastics and ceramics etc.
Photon Counter PCS 30

Photon counter PCS 30 has facilities for low light level measurement and also for high-intensity level measurements. In the photon counting mode, the pulses are preprocessed in a pulse amplifier discriminator unit. The output can be read on a digital panel meter or recorded on a potentiometric recorder.

Specifications: Maximum rate: $3 \times 10^6$ pulses/sec with 12 ranges, DC current $30 \text{n amp.}$ to $10^5 \text{n amp.}$ in 8 ranges output, time constant selectable from 0.05 to 10 seconds in 6 ranges. High voltage output 500 to 2000 volts variable, the recorder output 100m V full scale for operating potentiometric recorders.

Diffraction Gratings

Plane holographic/ replica transmission/ reflection gratings are available with standard range of groove density 600-1200 lines/mm. They are available in sizes (mm) 25x25x7, 51x51x8 and 69x69x9. All replica gratings are blazed at 5000Å, while holographic gratings are unblazed. General coating is aluminium.

Future Products

- Scanning Electron Microscope
- Film Strip Projector
- Halogen Lamps
- Multivision
A \& D Project on Photovoltaics

CEL is sponsored by the Commission for Additional Sources of Energy, Department of Science and Technology, Govt. of India to set up a pre commercial pilot plant of 1kW per year fabrication capacity for solar cells and modules to demonstrate the techno-economic viability of photovoltaic system application in India.

Presently CEL, under the National Solar Photovoltaic Energy Demonstration Project, has capacity to produce 70 kW per year of photovoltaic cells and modules.

R&D work is in progress on the development of space qualified solar cells also.

Products Range

- Silicon Solar Cells
- PV Modules
- Surya napi-solar intensity meter
- Space qualified solar cells
- Photovoltaic systems for various applications.

The company is producing above mention products in five district divisions there are Ceramic division, Solar cell division, Instruments and Systems division, Ferrites division, Laser division. At present two sales offices, one at the work Sahibabad and anothers in Delhi, the company is doing its marketing activities. Nearly 50% of the sales dealing is being dealt in the
main sales office at Sahibabad. The Company has a medium size computer of Hindustan Computers Limited. The Central Marketing Group of the company has a staff of nearly 40 persons.

The company is facing problems due to lack of proper information about the market demands, competitor's strategies. Finned goods inventory is increasing day by day, for some products company is the only producer in India, but most of the demand is being fulfilled by imported goods, because the clients are not properly informed about the company's products. The company has its dealer's throughout the country, sales officers and sales assistants visit dealers and ultimate clients in a rotation or random way. There is not any formatted way for processing the informations gathered from the market. Therefore decision making varies with executive to executive.

Every year the electronics industry in our country expects some concessions from the government. This year, on the eve of budget for 1982-83 the electronics industry anticipated wide ranging reliefs from the finance minister.

The budget proposals relating to electronics goods provide import duty concessions covering no less than 45 new items of capital equipment and 13 new items of raw materials and components used by the industry. At the same
time, the basic customs duty for several items of finished electronic goods has been raised sharply. The excise duty on finished goods relating to video equipment has also been increased. All these proposals are in tune with the policy of making this country increasing self-reliant in the manufacture of electronic products. In order to assist the electronics industry to increasingly modernise its manufacturing apparatus, the government has proposed a reduction in the customs duty on machinery and instruments from the respective existing rates to 35 percent ad valorem; for materials and components, it has been lowered to 55 percent.

To extend protection to indigenous manufacturers, the budget has proposed an increase in custom duty from 40 - 60 percent to 100 percent in respect of computers, calculating machines, accounting machines, cash registers and certain electronic sub-assemblies such as computer peripherals. The excise duty on video cassette recorders and reproducers, television and video cameras and similar goods is proposed to be raised from 8 percent to 25 percent ad valorem. In the case of electronic machines for games of skill or chance including T.V. and video games, the proposed excise duty is 40 percent.

Up to certain limits due to these government concessions, the environment will be favourable to electronics industry. Central Electronics Limited has its monopoly in audio visual systems. Laser Systems, solar
cells etc. and rest of the products do not have too much competitors in the industry. Therefore the government policy well help to boost Electronics industry. Environment as a whole can be discussed in classifying into Macro and Task environment.

(31) **Macro Environment**

Generally most of the people prefer imported electronic goods. It is conceded that some of the electronic goods manufactured by the renowned companies in Japan, U.S.A., Hong Kong, Taiwan, Singapore etc. are superior to those manufactured by Indian companies, both in regard to quality and prices. Indian nationals coming from abroad give a clear proof of it on landing at any of our airports as they invariably carry one or more of these electronic products. The large scale shippings of these products is another indication of their superiority in quality. But we have to prove sooner than later, that we are capable of manufacturing electronic goods of world class. In fact, some of our electronic products are finding ready markets abroad, both because of high quality and competitive policies. Macro environment can be classified as economic, Technology and Legal.

(1) **Economic Environment**

Economic conditions of an average Indian is not much satisfactory for purchasing an electronic equipment. Usually middle class and upper class purchase electronic
Nearly 65% of the electronic market in India is of entertaining electronic and rest is for computer and instruments. Whereas in state nearly 65% of the investment is in instruments and computer field and rest is in entertaining electronic goods. Central Electronics Limited is a core industry in the field of electronics. The aims to establish this organisation is to check import of basic components and instruments.

However, the electronics Commission in its journal for the month of December 1981 has published the countrywise and item wise import of electronic goods in 1980 which totalled Rs. 910.96 million. Export of electronic products in 1980 was estimated to be Rs. 424.00. Roughly, import worked out to be more than double the exports.

The countrywise distribution of imports in 1980 was as follows :-

(As millions)

<table>
<thead>
<tr>
<th>Country</th>
<th>Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>227.232</td>
</tr>
<tr>
<td>UK</td>
<td>140.480</td>
</tr>
<tr>
<td>West Germany</td>
<td>81.805</td>
</tr>
<tr>
<td>Holland</td>
<td>14.502</td>
</tr>
<tr>
<td>Japan</td>
<td>161.421</td>
</tr>
<tr>
<td>Italy</td>
<td>6.532</td>
</tr>
<tr>
<td>USSR</td>
<td>9.238</td>
</tr>
<tr>
<td>France</td>
<td>64.167</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>18.637</td>
</tr>
<tr>
<td>Others</td>
<td>187.959</td>
</tr>
<tr>
<td>Total</td>
<td>910.963</td>
</tr>
</tbody>
</table>
Import of equipments and Components which Central Electronics Limited is producing in 1980 was as follows:

<table>
<thead>
<tr>
<th>Items</th>
<th>Imports (Rs. million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spares for tape recorders</td>
<td>1.005</td>
</tr>
<tr>
<td>Spares for consumer electronics</td>
<td>7.318</td>
</tr>
<tr>
<td>Transducers</td>
<td>4.028</td>
</tr>
<tr>
<td>Electronic instmements</td>
<td>3.737</td>
</tr>
<tr>
<td>Light limiting diodes (LED)</td>
<td>1.941</td>
</tr>
<tr>
<td>Ceramic Capacitors, Fired NES</td>
<td>1.424</td>
</tr>
<tr>
<td>Capacitors, NES</td>
<td>4.527</td>
</tr>
<tr>
<td>Ferrites</td>
<td>2.562</td>
</tr>
<tr>
<td>Solar cell</td>
<td>0.825</td>
</tr>
</tbody>
</table>

Analysing the facts about import it can be predicted that Indian electronics market is not fully developed and if quality products are reasonably priced than in the coming future organisation can run satisfactory.

(2) Technological Environment

In the high technology area in which i/s Central Electronics Limited is going to enter, the market needs change very rapidly, products are rendered obsolescent...
by new development in technology and system design. Few products have seen as many as fast changes as semiconductor devices in their relative brief history. Although there is enormous potential for applications of these devices, their use in India is very limited. The market for these products in India is yet to grow. This is thus an open field for a resourceful marketing, set up to explore and extract. There has been, for a variety of reasons, a general ignorance of the impact that these devices can create in the existing equipment and in opening out new channels of applications. In view of this peculiar situation, the demand for these components, will have to be created. The hard core demand of these products, worked out from the present application area is only tip of the iceberg.

Electronic industry with vertical integration have been confined mainly to U.S.A., Europe and Japan. Some of these companies have also set up assembly oriented units in countries like Hong Kong, Singapore, Malasya, Korea etc. The availability of cheap manpower and various incentives offered by the government in these countries. Due to various inherent advantages and other factors, U.S. industry has been dominating in the field, some of which are discussed below.

The influence of government orders for research and development and delivery in the U.S.A. lead to an
Early introduction of new technologies and production. Particular contribution was made military order and to lesser extent by those of NASA. Outside the states there was a serious failure in most companies to recognise fully the vast future potential for integrated circuits.

**Industry Structure**

Comparison of I.C. Usage trends

<table>
<thead>
<tr>
<th></th>
<th>Estimated total I.C. Consumption (millions of dollars)</th>
<th>Per capita I.C. consumption Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.A.</td>
<td>60</td>
<td>1200</td>
</tr>
<tr>
<td>European Economic community</td>
<td>4</td>
<td>480</td>
</tr>
<tr>
<td>Japan</td>
<td>7</td>
<td>480</td>
</tr>
</tbody>
</table>


U.S.A. markets forecast 1982

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Circuits (total)</td>
<td>19092</td>
<td>22237</td>
<td>25362</td>
<td>39890</td>
<td>55630</td>
<td>76000</td>
</tr>
<tr>
<td>U.S.</td>
<td>20.9</td>
<td>34.9</td>
<td>42.2</td>
<td>100</td>
<td>250</td>
<td>445</td>
</tr>
<tr>
<td>NASA</td>
<td>14.9</td>
<td>35.1</td>
<td>42.5</td>
<td>107</td>
<td>240</td>
<td>470</td>
</tr>
<tr>
<td>i.e. or co (total)</td>
<td>509</td>
<td>631</td>
<td>826</td>
<td>1156</td>
<td>1436</td>
<td>2056</td>
</tr>
</tbody>
</table>
From the above, one may conclude that the large electronics market of the world, favoured by state interventions, made an essential contribution to the rise of the Indian electronics industry in the world. However, one can argue that, though some quick of facts, these markets had existed in the same conclusive degree in major European Countries or in Japan.

Here in India due to less purchasing potential and not proper development in electronic area, the core electronic industry is not in position to boost production. Recently, government of India again increase excise duty for import of electronic components and instruments, therefore the organisations which are working with the foreign collaboration will have to purchase Indian Components. From the technical and quality point of view, Central Electronics Limited has a strong support of national Physical Laboratory and their own hard research and development department.

(3)

Conclusion: the import duty for raw materials and components an reaction in custom duty on machinery and instruments from the respective existing rate to 35 percent value; for materials and components, it has been lowered to 55 percent will also help to boost component industry like Central Electronics Limited.
It is true that component produced in India are not up to the quality mark due to lack of automatic mass production. The impatient consumer in this country is sometimes likely to exhibit his frustration with indigenous manufacturers, but we must remember that it is through a persistent policy of encouraging the domestic manufacturer that this country can hope to improve the quality of its products. Hence, there is ample justification for the enhancement of customs duty on such imported equipment as it likely to compete with domestic manufacturers.

Marketing plays a crucial role in determining a company's success. Customer identification, product planning, promotional activities and pricing policies are the essential elements of the total business activity of an enterprise. Collection of information from dealers, ultimate user by product is also of the prime important task of a marketer. Task environment can be analysed by considering three main factors, buyers attitude and response, channels of distribution and competitors strategies and policies.

Company is selling their products to three distinct type of buyers. First type of buyers directly use the product like consumer durable i.e. slide projectors, Laser
systems. Second type of buyers directly purchase the products as an industrial product and use it in their production assembly i.e. capacitors, LDL, ferrites etc. Third type of buyers are dealers, they buy the products for reselling.

As the upper class and middle class of our society in increasing the demand for electronic products is also increasing like a jet speed. A number of buyers do not know about the products of the organisation. The complete process of marketing in very lengthy like, inquiry, reply, job order and supply, it is time consuming also. A number of clients even do not know about the organisation. Some clients when came to know that Central Electronics Limited is also an organisation, producing electronic components and they inquire about their requirements. In the reply when they receive that CIL is able to fulfill their limited requirements, they naturally shift their dealings to other organisations.

Mostly all the industrial buyers give orders only after testing the quality of the products in their quality control department or research and development department. Laboratory usually all the dealers seems much crazy in the beginning but after some time due to not proper head towards them, they become idle and do not pay any attention towards sale of the company's products.
Company is selling products through mainly three different channels of distribution. The first and the simplest channel is the direct sale to the clients as according to their needs and specifications. The second type of channel of distribution is through the help of dealers and area agents. And the third type of channel is the sale of products through the company's Industrial retail show rooms and sales force.

At present nearly 50% sale takes place by direct selling, 25% with the help of dealers and rest through retail show room and by the efforts of sales force. Company's authorised dealers always fear with the interference of Company's sales force and direct selling, in their authorised areas. Usually dealers do not provide any information about the quality, price and competitive atmosphere of their territory's.

Organisation is facing competition from private as well as public undertakings. Usually in the Component marketing main competitors are BKL, SCL, UPWAC, AELTMC, LIALMA, ECIL, PICC Electricals etc. In the instruments area ELECTRONICA, GLIL IAL, AELTMC etc. are the main competitors. In certain areas like audio visual systems only Central Electronics Limited is authorised producer.
of this type systems. Only some Physical laboratories are producing solar cells except the company.

Imported components and devices are the competitors in all respects. Cost of production is lower in developed nations due to automation and here majority of the job is done manually, therefore cost of production is higher and quality factor is lower. It is the only reason due to which most of the clients prefer imported components.

Absence of significant number of Competitors is a positive force which will assist the company in its growth. For certain products the market is an open field for the company to cultivate and to reap good harvest if it employees suitable techniques. The company can orient the market to its own dip designs which, in due course, will establish themselves as standards.

(C) EXISTING MARKETING INSTRUCTION SYSTEM

Recently the organization has centralised their marketing department and has appointed a commercially experienced Chief marketing manager for central marketing operations. Exhibit shows the marketing management organizational chart of the Company. The Company is a new entry in the electronic industry and for some products there is no competition in the market, even the demand is very low. For majority products as the electronic industry is expending exponentially, the company found itself in a highly
competitive market. It becomes evident that the company would have to become marketing oriented to sell its products. Scientists and engineers are holding most of the marketing positions. As for the selling of an industrial product, product quality and price are the prime important factors, even then some selling arts and the presentation of the product in such a form as to provide benefits and qualities in optimum mix are also equally important.

At present it is very difficult to say that the company is having a well defined marketing information system. There is not any proper way for collection of data for the sake of future planning, coordination and control of marketing activities.

The subsystems of marketing information system for gathering, processing, and utilizing environmental data are working as under.

1. **Internal Accounting System**

Every organization has an internal accounting system. The difference is only in approach, the internal accounting system of the organization is designed traditionally and the major task of internal accounting system is to provide information regarding current activities, sales performance; sales, costs, inventories, cash flow, account receivables and so on. Every marketing division...

One copy of these reports is sent to the Finance department. In the Finance department all reports are preserved and, useful data is extracted from these records.

Some files are being maintained for those companies, with whom the continuous transactions are going on. Marketing officers collect informations in their diaries, as they want. When an officer leaves the company. He takes away all market information with him. The company has three distinct type of clients dealers, ultimate user of the products and industrial users. All those three have their different motives, therefore these files should be maintained in different order.

Advertising expenditure file is maintained in the central marketing department and there is not any proper way for testing the advertising effectiveness. The company is taking budgetary decisions only on their experience basis.

(2) MARKETING INTELLIGENCE SYSTEM

Recently organisation has centralised their marketing department and starts working for collecting environmental data. Central marketing department gives directions to departmental executives for collection of information about competitors activities, market potential, dealer's potential etc. There is no systematic way for proper information and forecasting, ever no information is preserved
In the memory of computer.

For decision making problem regarding selling strategies, Chief Marketing Manager calls the concerning office, if by chance he is or tour then the decision has to rely on available misinformation. The main function of marketing intelligence system in an organisation is to watch competitors activities, their new products, new brands, advertising and selling stunts. As the nature of Indian electronics market is going to be complex and complicated day by day the organisation should make some changes for the collection of data for competitors marketing strategies. Sales assistants and marketing officer know about their competitors but their information is only up to them.

Second important factor of marketing intelligence system is to know about the potential of the market. In this area, there is not any systematic work for data collection. Only with the help of sales invoices, executives are taking decision about the potential of the market. Executives are not providing electronic mannales and magazines. For number of products the clients are countable and information about their needs and wants should be forecasted. The organisation is not having any communication with the consultant in the industrial electronic area. As other organisations in the same product line, like Marat Electronic India Ltd., are having applications division, but Central Electronics Limited which is having
the support of National Physical Laboratories is not having such type of division for any information feedback except clients' complaints.

Dealers files are being maintained separately in ferrous, ceramic, and division usually dealers want to know about the other products of the organization, but according to dealership contact they can deal only the products of one division. No response forms are provided to dealers for knowing their reactions about the products. Occasionally sales officers and sales assistants visit dealers and discuss about their markets. There is no way for transmitting these information to central executive except oral discussions. All distorted and wrongly handled informations are doing much harm inspite of profit for the organization.

For knowing about the seasonal variations, only field executives know, they know about the variations, but do not know quantitatively.

(3) MARKETING RESEARCH SYSTEM

The task of marketing research system is to gather, evaluate and report specific information needed by executives for decision making and problem solving e.g. market survey, consumer preference fast advertising evaluation and so on. There is central electronics limited there is no
such type of work. Only one executive is seeing marketing, research and advertising operations of the organisation.

Organisation look like a Research and Development lab, most of the executives have the idea that if good products will be manufactured, their sale will automatically take place.

Because the organisation is a new entry in the electronics industry and for production of the products which the company is producing, is an outcome of hard research and development therefore in the initial states, the higher officeals of the organisation do not think the need to depute some staff for marketing research but in the present circumstances, it is very much needed to know about the behavior of clients, their potential etc.

(4) MARKETING MANAGEMENT SCIENCE SYSTEM

Central Electronics Limited does not have marketing management science system. This system is for analysing complex marketing problems and operations, with a view to improving or optimising them.
Computer-aided design is a technique in which man and machine are blended into a problem solving team, intimately coupling, the best characteristics of each, so that this team works better than either alone. Design tasks must be done within time and economic constraints. A designer makes his decisions based on his best available information which is, in part, a function of how well he can communicate with his environment. His information interchange with his environment can be facilitated with the proper computer interface, thus allowing this designer an opportunity to make a greater number of effective decisions per unit time. More decisions per unit time means that some otherwise ignored or grossly estimated component interactions of the systems which the designer is designing may now be evaluated more quantitatively. We should give attention to the following points:

(1) We must pay attention to time and economic restraints.

(2) A designer's knowledge is a function of his ability to communicate with his environment.

(3) A computer can facilitate his information interchange.

(4) Because design is a decision making we would like to make more effective decisions per unit time.
(5) The sum total of individuals efforts of man and machine are transcended when man-computer synergism takes place.

(6) We are always striving to employ the best characteristics of each.

(7) Some design system can work with many human designers we are than capable of working with an integrated, multi-disciplinary team.

(a) **INFORMATION PROCESSING**

A basic knowledge of computers and ancillary equipment (hard ware), and of the various facilities made available by means of software (computer programs), is essential for business personnel who are becoming involved in the automation of their company's offices for speedy processing of the collected informations.

A typical information processing cycle is shown in fig. The first stage in the information processing cycle is the creation of a document—a letter, report, order, invoice, etc. With modern technology this documents need not exist as a piece of paper. The information can be entered directly into a computer system by an operator baying in the information. During this process the information can be displayed on a screen (visual display unit).

It is helpful to the operator if the computer responds as each piece of information is entered. For example, the operator may ask for a list (menu) of the routines available to be displayed and then select the required
one. If the operator makes the mistake the computer should indicate this and allow corrections to be entered immediately.

Once the document has been created and checked, by computer program and/or visually, it can be distributed to the recipients. Electronic distribution or mailing involves sending the documents from the computer which created it to compatible receiving equipment. Copies of documents can be filed in a conventional way or the information can be stored on magnetic media.

The information that is processed may be words or text as in a letter or report, or alphabetic/numeric data as required for orders and invoices. The type of information processed will determine the configuration that is required.

PROCESSORS :-

Essentially, the equipment in the electronic office will comprise one or more processors linked to peripheral and storage devices, such as printers and magnetic disc units. Each processor contains central processing unit (CPU) for performing arithmetic and logic functions, e.g. comparison of data items, memory for storing programs and data and control hardware.

Standard programs (systems software) may be available in ROM and further programs and data can be
loaded in to it from the keyboard or from magnetic disks or tape used as backing storage. The capacities of memories are generally in bytes. For example a memory of capacity 64 kelobytes can hold 65536 characters. K stand for 1024 and a character can be encoded in one byte using a standard code such as ASCII (American Standard code for information interchange).

(b) SYSTEM SOFTWARE

A computer system comprised at least one processor and some peripheral devices requires a piece of software called an operating system. This is used to handle the peripheral devices and to control the running of application program, which contains instructions to perform tasks for particular application. One CPU can process only one instruction at a time. However, several tasks from more than one application program can be queued up so that each task is processed when it gets to the top of the queue.

Application packages are available from computer manufacturers and software houses. If no suitable package is available, the user will need to write applications programs in a problem oriented language such as COBOL (Common Business Oriented Language) or BASC (Beginners All-purpose symbolic Instruction Code) with extensions for business use. Translator programs are required for
converting instructions written in a particular program-
ning language into the processor's own binary machine
code.

**Disk Storage**

Disk storage is used to hold programs when they
are not being used for processing. During processing,
all the program instructions to be executed must be
resident in the processor's main memory, e.g. in ROM or RAM.
A program held on disk is loaded into RAM by the operating
system when required according to commands entered by the
user. Several different types of disk storage are avail-
able. The principles of recording information are similar
but the physical characteristics are different. Large
computer systems use either fixed disks with large
capacities so that all files are permanently on line
(attached) to the processor or exchangeable disk stores
(EDO) with capacities typically 60 to 300 per unit.

**Printers**

Printers may be selected for a variety of factors
including price, speed and print quality. Matrix printers
provide an inexpensive form of printing suitable for
office equipment. For word processing applications,
particularly where electric typewriter quality is
required for each letter, a commonly used printer with
microcomputers and word processors in the daisy-wheel
printer.
(c) **FILE PROCESSING**

Information processing involves the use of files of text and data. In computer based systems, such as those used in an electronic office environment, the files are held on magnetic media which contains also libraries of computer programs.

Information is stored on the disks by means of 'write' instructions in Computer programs and accessed by 'read' instructions.

**FILE PROCESSING USING BASIC**

The BASIC instructions, used in the 'file maintenance' program, for opening and closing disk files, and for reading and writing records, are shown below. Each line in a BASIC program has a number so that it can be changed (EDITED) or deleted and extra instructions may be inserted between non-consecutive line numbers if necessary. Data areas in the Computer's memory can be referenced by variable names specified in BASIC program.

660 \& ODisk, Dk, "P", "CONTACTFILE. Disk," 16/ is a BASIC instruction for opening the direct access (D) file named CONTACTFILE 'Dk' which has an index with variable name 16, and is on the disk drive specified by Dk.

**FILE PROCESSING USING COBOL**

Although BASIC in its extended form is used for small business applications, the more comprehensive file handling facilities available in COBOL have made
it a commonly used programming language for miniframe and minicomputer applications.

COBOL program comprises four divisions. The Identification Division contains the name given to the program, and can include also details about the author, installation etc. The Environment Division gives details of the Computer(s) used and the physical devices holding files. The Data Division describes the files, records and data items used by the program. The part of the program which describes the processing to be carried out is called the procedure division.

**DATA BASE SOFTWARE**

Any collection of data or files can be considered to constitute a data base. Proprietary data base software is available from computer manufacturers and software houses. Generally data base management systems allow each user to have an independent view of the data, related to the user's applications and independent access to certain data items.

Since many users may need to access the data base, the DBMS should have facilities to ensure data integrity and to protect certain data items from being accessed by particular users. Data integrity can be maintained by incorporating recovery mechanisms in the DBMS, e.g. for creating back up copies of data base and logging
update operations. Another potential problem is that of more than one user trying to update information at the same time. This problem is avoided by 'locking out' other users while one user is carrying out an updating operation.
CHAPTER

SOME RECOMMENDATIONS FOR IMPROVEMENT IN THE EXISTING R&A S

To day raw data, if preserved in a systematic way, can be a useful information for tomorrow's decision making. Quick and efficient processing will provide benefits for taking action in the present circumstances.

Some times executives think that some information are not useful for them and any neglect them. For the removal of this general practice, the organization should have proper format for collection of data. The Company is not having marketing management science system, applications division, marketing management data division etc. within the facilities available in the organisation, recommended improvements in the existing R&A S can be done as under.

(a) VALIDATION OF THE DATA

Operations can be grouped by functions. Marketing operations like advertising, pricing, promoting, making proposals and making customer calls can be grouped by integrated functions. Centralisation of the above functions is one of the solution. The Company needs following:

- Sales history data
- Industry sales data
- Government statistics
- Market research data
- Cost data (for both marketing expenses and product costs)
- Marketing personnel resource data
- Supply Constraints
- Financial Constraints
- Intelligence data on Competitors and Customers
- Intelligence data on governmental actions

Some of the data are being maintained in the present marketing system. Files are being maintained in the individual divisions and their report forms are shown in ANNEX M1 to M4.

The marketing officer, has to do the long and short terms forecasting, and develop marketing plans. Long term forecasting should be undertaken on regular basis. As the Company is having some system and it cannot be centralised in a day or week. The system of data gathering should be developed in stages.

Considering the need of forecasting and planning the marketing activities, a sales response form should be developed, on which most of the sales data should be depicted. The data should be categorised in such a way that the operator can feed it into the computer.

For long term and short term forecasting, two types of marketing plans should be developed a five year marketing plan and a yearly marketing plan. Besides sales forecasts, other information to be included in the plan would be obtained from the published data, other
departments of the company and the following 3 forms - samples of the type of information that could be gathered from these forms are given below:

1. **Sales Call Report Form**

   Call reports list the customer's who made inquiries for different components and instruments. Size of customer's demand can be estimated by depositing of inventories based on these enquiries. To make effective use of reports sent by clients, sales assistants and sales officers. It is profitable to feed the information obtained by them into the computer. For this purpose, the old report form should be discontinued and substituted by new sales call report form.

   This form should be used only for sales calls and reports on order. For all other correspondence, letters should be addressed directly to the persons concerned to get the required information. For designing the sales call report following information are needed.

   - Customer's name and complete address
   - Enquiry reference code given by call
   - Name and designation of persons contracted at the client's place
   - Date in which the client has been contracted
   - Date on which you called on the prospective client
   - Customer project number, depending on the number of projects one particular customer has
# Sales Call Report

**Customer**

**Persons Contacted**

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pre</td>
</tr>
</tbody>
</table>

**Enq. Ref.**

**Type of Industry - Main Products**

**Customer No.**

**Project No.**

**Visit No.**

**Order expected from customer in Month-Year**

**Customer expects delivery in**

**Payment Terms (Tick)**

1. Net Payment
2. Deferred Payment
3. Hire Purchase
4. Special Terms

**Other Remarks**

**Prospects**

1. Under Consideration
2. Waiting Sanction
3. Order Under Issue

**Action Required at H.O./Units/Divisional Office**

7. Altered New Number
8. Postponed By Months
9. Dropped
0. Lost to Competitor

**Action Taken by Sales Engineer**

1. Project
2. Non-Project

**cc to:** Dy. Sales Manager/Div. Manager/Marketing Officer/Action Centre (If required)

**Signature**
in hand.

- Visit whether first, second....

- Payment terms and conditions

- Expected time for an order

- Type of demand. Project demand means new factories, major expansion and major replacements. Non-project demand includes all not does not fall under project demand.

- Space for component and equipment demanded

- Space for quality and quantity

- Customer preference rating. Customer preference rating should have been introduced to scientifically analyse the receipt and loss of orders in each case.

- Remarks, for nuances and expectations.

Considering the above demand list, sales call report has been designed and shown in the above.

(a2) Order ACCEPTANCE FORM

If the company is in position to deliver products, acceptance form should be dispatched. In general there are three advantages.

(i) From this it could be found out how long the orders had been pending. The factory could be sound about the delay and simultaneously estima-tions can be made of expected delivery delays in future.
Dear Sirs,

Sub: ........................

Ref: ........................

We thank you for your purchase order referred to above. We have pleasure in issuing our formal order acceptance as per details given below and subject to our terms and conditions of sale (copy already with you). Kindly acknowledge by returning the Acknowledgment form annexed to this letter duly filled in and signed.

Assuring you of our best services.

Your's faithfully,

for Central Electronics Limited

marketing manager
ACCOMPLISHMENT FORM

To ........ Date ........

CENTRAL ELECTRICITY LIMITED

CEL, Sahibabad.

Sub. Order acceptance No ............ Dated ........

The above order acceptance is accepted as per the terms thereof.

Signature ............

Address ............
Orders can be classified into government orders, private orders etc.

Sales efficiency can be measured by comparing orders against targets. Following terms and conditions are needed for the design of order acceptance form:

- Description of stores, quality price ex. factory
- Sales tax and other taxes duties etc.
- Terms and conditions for delivery
- Inspection facility
- Packaging
- Consignee
- Bills
- Payment
- General

Order acceptance form is shown in Appendix.

Despatch form is used for:

(a) for computing the time lag between the initiation of the order and actual delivery.

(b) Amount of outstanding payments.

For industry sales data the intelligence department of MAA should contact associations and some forms should be designed to know the client's choices and dealer's preferences. Cost data is not a problem, the accounts department is providing cost data at present and it should
be continue. Data regarding financial constraints, supply constraints should also be preserved in the memory of computer.

Some files for maintaining intelligence data on competitors and government actions should be maintained.

(b) PROCESSING OF THE DATA

After collection of the data, its processing should be in a systematic way. At present the organization is maintaining very few files. It is hoped that in the coming future work load will increase therefore for quick and efficient processing files should be maintained in the memory of computer. Broadly five types of files can be maintained sales data file, external data file, forecast data file, market research data file, other data file.

(b1) SALES DATA FILE

Detailed sales data should be maintained at least in three files. Sales orders that are in hand but have not yet been dispatched are in the sales order file, and its associated detail file. Sales have been dispatched but not yet paid for are in the invoice detail file. Sales that have been dispatched and paid for are in sales history file.
(b1-1) **Sales Order File**

Sales order file contains number of products. Therefore, there should be at least two files. One contains the data that is independent of particular products, the other, the sales order detail file, contains the data concerning individual products being ordered. Two file approach for sales order file is shown below, and order entry system is a set of procedures to input the who, what, where, when, and how of a customer order.

-------------------------------
**Two - File Approach to Sales Order Data**

<table>
<thead>
<tr>
<th>Data Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OnNum</td>
<td>Sales order number</td>
</tr>
<tr>
<td>EntNum</td>
<td>Customer number</td>
</tr>
<tr>
<td>DATA</td>
<td>Market area number</td>
</tr>
<tr>
<td></td>
<td>Purchase order number</td>
</tr>
<tr>
<td></td>
<td>Date of order</td>
</tr>
<tr>
<td></td>
<td>Requested delivery location code</td>
</tr>
<tr>
<td></td>
<td>Transport mode</td>
</tr>
<tr>
<td></td>
<td>Back order okay?</td>
</tr>
<tr>
<td></td>
<td>Terms of payment code</td>
</tr>
<tr>
<td></td>
<td>Special discount granted</td>
</tr>
<tr>
<td></td>
<td>Sales person</td>
</tr>
<tr>
<td>OrdNum</td>
<td>Initial order type code</td>
</tr>
<tr>
<td>ACCData</td>
<td>Provide delivery date</td>
</tr>
<tr>
<td>DATA</td>
<td>Current order type code</td>
</tr>
<tr>
<td></td>
<td>Actual delivery date</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Sales order number</td>
<td>Sales order detail file date items</td>
</tr>
<tr>
<td>Line number</td>
<td>Sales order number</td>
</tr>
<tr>
<td>Item number (product n.o.)</td>
<td>Description</td>
</tr>
<tr>
<td>Description</td>
<td>Customer's item number</td>
</tr>
<tr>
<td>Unit of measure</td>
<td>Unit of measure</td>
</tr>
<tr>
<td>Quantity</td>
<td>Quantity</td>
</tr>
<tr>
<td>Price</td>
<td>Price</td>
</tr>
<tr>
<td>Item status code</td>
<td>item status code</td>
</tr>
<tr>
<td>Warehouse code</td>
<td>Warehouse code</td>
</tr>
<tr>
<td>Engineering complete data</td>
<td>Engineering complete data</td>
</tr>
<tr>
<td>Item available data</td>
<td>Item available data</td>
</tr>
<tr>
<td>Pointer to shipment file</td>
<td>Pointer to shipment file</td>
</tr>
<tr>
<td>Quantity on back order</td>
<td>Quantity on back order</td>
</tr>
<tr>
<td>Quantity dispatched</td>
<td>Quantity dispatched</td>
</tr>
<tr>
<td>Date of final dispatch</td>
<td>Date of final dispatch</td>
</tr>
<tr>
<td>Invoiced amount</td>
<td>Invoiced amount</td>
</tr>
<tr>
<td>Cost of product sold</td>
<td>Cost of product sold</td>
</tr>
<tr>
<td>Gross mar. in</td>
<td>Gross mar. in</td>
</tr>
</tbody>
</table>
(b1-2) Invoice detail file

The invoice detail file defines the charges for each dispatch of product to a customer. These are usually a one to one relation between dispatched and invoices, except in situations in which deliveries are made to more than one customer in a single dispatch. The content of a record in this file is shown below:

<table>
<thead>
<tr>
<th>Field Data</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment instructions &amp; code</td>
<td></td>
</tr>
<tr>
<td>Sales order number</td>
<td></td>
</tr>
<tr>
<td>Shipment number</td>
<td></td>
</tr>
<tr>
<td>Terms of payment code</td>
<td></td>
</tr>
<tr>
<td>Invoice data</td>
<td></td>
</tr>
<tr>
<td>Product charges</td>
<td></td>
</tr>
<tr>
<td>Freight</td>
<td></td>
</tr>
<tr>
<td>Taxes</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>
The sales that have been dispatched and paid for are in the sales history file. The information from where it comes is shown in this file. It does not contain the an exhaustive list of the data items that may be worth saving in the history file, which may well be stored on magnetic tape, or other mass storage device. The list is intended to be suggestive of the range of facts the file may include. New record occurrences are added to the sales history file by the cash receipts processing system.
<table>
<thead>
<tr>
<th>TYPE</th>
<th>DATA ITEM NAME</th>
<th>SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dates</td>
<td>Sales order date</td>
<td>Sales order file</td>
</tr>
<tr>
<td></td>
<td>Invoice date</td>
<td>invoice detail file</td>
</tr>
<tr>
<td></td>
<td>Payment Completion date</td>
<td>Cash receipt detail file</td>
</tr>
<tr>
<td>Customer</td>
<td>Customer number</td>
<td>Invoice detail file</td>
</tr>
<tr>
<td>Product</td>
<td>Product number</td>
<td>Sales order detail file</td>
</tr>
<tr>
<td></td>
<td>Quantity shipped</td>
<td>Sales order detail file</td>
</tr>
<tr>
<td></td>
<td>Quantity ordered</td>
<td>Sales order detail file</td>
</tr>
<tr>
<td></td>
<td>Price</td>
<td>Sales order detail file</td>
</tr>
<tr>
<td></td>
<td>Discount</td>
<td>Invoice detail file</td>
</tr>
<tr>
<td>Dispatch</td>
<td>Freight</td>
<td>Dispatch file</td>
</tr>
<tr>
<td></td>
<td>Dispatch origin</td>
<td>Dispatch file</td>
</tr>
<tr>
<td></td>
<td>Dispatch destination</td>
<td>Dispatch file</td>
</tr>
<tr>
<td>Selling Unit</td>
<td>Sales person</td>
<td>Invoice detail file</td>
</tr>
<tr>
<td></td>
<td>Branch office</td>
<td>Invoice detail file</td>
</tr>
</tbody>
</table>
Along with these sales data files several other files should also be maintained. The general ledger file is likely to contain sales revenue, allowances, and freight by zone or less general product categories, depending on how the chart of accounts is set up. The inventory file contains a subsidiary ledger showing sales, order quantity, and other sales data by specific product number. The customer file contains total sales by period for each customer. The forecast allocation file contains sales totals by market area and product.

(b2) **DATA FILES**

Data on company marketing activity include facts about the number of sales calls made, the amount of advertising done, and promotions and discount offered. Industry sales data can be obtained from a trade association or government bureau. Government statistics that may be useful, including in the file can include population statistics, household statistics, employment statistics, and economic statistics. Fitting this external data to the market areas of the file often requires customized interpolation routines. The cost of getting the data into the file should be weighed against the planning improvement it will make possible— an improvement difficult to quantify.
The market forecast file contains forecasts of company sales by market segment. Sales forecasts based on share of market concepts require industry sales forecasts and market share forecasts. Here for central electronic Limited industry sales is independent variable for forecasting purpose. Variables such as interest rate, money supply or production of electronic assemblies can also serve as independent variables for purpose of forecasting sales. These independent variables must be forecast unless they are treated as "leading indicators". The forecast parameters listed below.

**MARKET FORECAST FILE DATA ITEMS**

**Marketing area code**

**Description**

**Market activity statistics (by period)**

**Sales forecast (by credit type and period)**

**Forecast parameters**

**Sales forecast (by credit type and period)**

**MARKET RESEARCH, DATA ITEMS**

There are the approaches to market research, test marketing and survey. The test conducted by
changing the price, terms and other features of the marketing program in certain marketing areas while holding it constant in other comparable market areas. The file implications of this type of marketing research concern recording what happens during the test period in each area. Normally, the sales history file will provide adequate documentation for analysis of this type of test.

Opinion survey technique will be more advantageous for the organization, because the clients are limited and can be contacted personally. Usually the file for an opinion survey contains a record for each person or company included in the survey.

(b5) OTHER DATA FILES

Other data files should also be maintained for smooth functioning. For example marketing personnel resource data files should be available for suitable job for deserving personnels.

Destruction of useless data is also of such importance, destruction of data records should be on a purely routine basis following one-time use or any occur in review of old records. Some times data should be manipulated by considering the validity of circumstances. Quantitative data should often be operated upon by adding, subtracting, and so on, to change their form or to develop their meaning through formulas or equations.
(c) Removal of Delays and Disappearances of Information

Disappearance of information was only due to unsystematic way of collection of the data. If all the required data is maintained in files, as discussed in the 7th chapter, problem like disappearance of information can be eliminated. For complete elimination of this problem, response forms for gathering all type of operating data should be provided from internal as well as external sources of information.

All the data which sales assistants and sales officers collect from the environment about the quality, price, after-sales services and other promotional activities of the competitors should be formatted in such a systematic form by which it can be fed into the computer. It will be benificial for the organization to create a new post for Intelligence Data Officer.

Delays in processing of the information can only be removed by balancing properly the man and machine (computer) system. Centralization all files at one place and their processing with the help of computer. Individual divisions should only be given directives for the fulfillment of order within time. Organization should have all documents because business is never ending activity while personnel shift their positions from organization to organization.
(d) ESTABLISHMENT OF NEW DIVISIONS

For smooth functioning of the marketing department some new divisions should be established and further modifications can be done as according to need. The company is facing the emergence need of Applications division, Marketing management, Science division, Marketing research division, data division.

(d1) APPLICATIONS DIVISION

Applications of the products produced by the company is the need of number of clients. Clients are either designers or experienced persons, after using the products in their assemblies, if they are properly contacted, can provide ample informations about the qualities of the products. Applications division will work as a bridge between marketing and production department. A response form for similar type products should be designed seperately for the collection of useful data. Other competitors of the company like Bharat Electronics Limited, MCL, SC., NO Electrical all are having a applications division. These organizations are providing facilities like consultancy and capturing a big market share.

(62) SCIENCE DIVISION

For testing new applications in the marketing department the organization should have marketing responsible science division. Persons having the knowledge
of system (computer) and marketing should be appointed as executive in this division.

Environmental data which is not easy to quantity for example government concession to electronics industry to import processing machines and its impact on the purchasing capacity of clients is difficult to quantity. By the help of mathematical modeling and simulation it is very difficult to solve these problems. Marketing management science division can solve these problems.

For launching new products into the market this division can provide data for demand in a particular locality for a period. New marketing strategies for achieving desired objectives can be developed with the help of this division.

Marketing research division

Being the complex behaviour of electronics industry and redirected marketing efforts of the organization is facing the problem of finished goods inventory and unnecessary blocked of money. This problem is due to wrong study of market which is lack of proper marketing research.

Marketing research division can extract useful data from the response forms and a separate file can be created in the computer memory. Basically market research systems are used to develop, test and predict the effects of actions.
taken or planned in the basic system of marketing (pricing, advertising, design etc.).

For establishing pricing policy, historical analysis of past data can be conducted. While for the analysis of advertising expenditures correlation by numerous market segments or sales and advertising expenditures can be processed.

(d4) **INTELLIGENCE DATA DIVISION**

several types of data systems are used to support intelligence operations. The data system should be defined first of all, in most of the cases after conducting interviews and experiments the data manipulation and analyses are done.

In test marketing, the timing of the experiment should take into account the periods used to accumulate sales in the market forecast, inventory and other files. Also, if special data items need to be collected during the experimental period, arrangements should be made ahead of time, including clear instructions and training for all those involved. Statistical analysis of sales and other data to determine the effects of the experiment may be aided by use of standard computer program packages for statistical analysis. Opinion survey data systems need to be well planned and managed to keep costs under control and to obtain statistically significant results.
CHAPTER VI

PROPOSED MARKETING INFORMATION SYSTEM

Marketing plays a crucial role in determining a company's success. In the design of such a system, one should study clients' needs and desires, developing product concepts aimed at satisfying unfulfilled needs, testing the validity of these product concepts, designing product features, developing packaging and brand names, pricing the product to recover a reasonable return on investment, arranging for regional, national and international distribution, creating effective marketing communications to let the public know about the product availability, purchasing the most efficient media for the commercial messages, auditing sales, monitoring clients' satisfaction and revising marketing plans in the light of results.

At present the organization maintains information only about sales records or orders and dispatches. But it is needed is a system that will give marketing managers information to help them make better decisions about pricing, advertising, product promotion policy, sales force efforts, and other vital marketing matters. Such a system should also take account of the necessity elsewhere in the organization for information concerning marketing, sales, and other internal information that affects decisions in other subsystems of the company.
Proposed Structure

Chief Marketing Director
Manager

FIG. 3
The marketing function has been serviced with information contained in long-end sales reports. These reports are sufficient from two short columns; they are clerical in nature and therefore do not contain decision-ready information or they arrive too late for remedial action. These shortcomings can be overcome with a central marketing system some that along the lines depicted in figure.

The company cannot be switched at once toward machine dominated system. Analyzing the present circumstances and availability of resources a man-machine system will be suitable for the company. With the passage of time and availability of resources (computer professional, financial resources, system available etc.) a computerized system can meet the challenges in the present situation. The computerization of the other departments should be done along with the marketing department.

Centralization of Marketing Activities

Centralization of marketing activities is nothing except integration of all the environmental and control informations at one place. The data should be collected in a particular format as suggested in the last chapter. For the storage of the data files should be maintained. At once it is not possible to store all the data into the computer memory therefore some files should be maintained in the computer while others should be maintained as usual but their formats should be changed.
SALES DATA BASE INTEGRATION SCHEM

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Invoice</td>
<td>Sales</td>
</tr>
<tr>
<td>Sales and Reports</td>
<td>Profitability</td>
</tr>
<tr>
<td>Sales and Expense Report</td>
<td></td>
</tr>
<tr>
<td>Transportation Expense</td>
<td></td>
</tr>
<tr>
<td>Wire House Reports</td>
<td></td>
</tr>
<tr>
<td>Dealer Sales Transactions</td>
<td></td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td></td>
</tr>
<tr>
<td>Accounts Payable</td>
<td></td>
</tr>
<tr>
<td>Key Roll (marketing)</td>
<td></td>
</tr>
<tr>
<td>Manufacturing Costs</td>
<td></td>
</tr>
<tr>
<td>Annual Reports (customers, suppliers etc.)</td>
<td></td>
</tr>
<tr>
<td>Market Research etc.</td>
<td></td>
</tr>
</tbody>
</table>

COMPANY DATA BASE

Marketing Information System

Computer

Periodic Automated Reports

Sales Receivable

Record Summary

Transaction Analysis

Exception Inquiries etc.

Customer Lists

Debts

Credit

Discount

Distribution Expense

Promotional Allowances

Market Share

Inventory

Forecast

Service

Customer Service

Sales Records

Record Summary

Transaction Analysis

Exception Inquiries etc.

Sales Line

Profit Line

Customer

Salesman
At present the records are being maintained at five places and some files are not being prepared, some useful data in missing, delay in the processing of information. A centralized man-machine systems can overcome these shortcomings. Deligation of authority to the central office to perform various jobs can provide an efficient marketing information system. The problem like general orders, stock positions can be solved easily. Some new departments like applications division, intelligence data division, marketing management science division will contribute something new to the marketing information system. These is need to modify the structure of the marketing department for providing the above-mentioned facilities in to the system.

Structure of the Marketing Department

The existing structure of the marketing department suffers from the lack of functional deficiencies. Marketing activities in the company are essential, creatively and the company is not seeing any well-structured data collection and utilization procedure. As in the earlier chapters the need for some function is shown.

After conducting existing system study and comparing with the standard marketing information system, it is suggested that the organization should establish some new departments. Mainly marketing research division, applications division, management science division, data division, should be established. Proposed structure of the marketing department is shown in figure.
In the existing structure only one department is performing two functions marketing research and advertising. While it is needed that advertising and sales promotion should be a separate division.

**INFORMATION FLOW**

At present the flow of information is unidirectional while there should be proper feedback of information. The sources of information are data. Data either from environment or internal sources should be collected in such a way so as to process with the help of man-machine system. Executives take decision on the basis of processed and arranged data.

Sales call reports, customer invoices, cost reports, inventory reports, accounts receivable reports data from the intelligences division, data from marketing research division are considered as input informations. All these above informations store in the form of records. All the major decisions regarding policy matters should be taken at the central place and the arranged records should be maintained either in the magnetic disks or in the ledgers.
Report on Visit to Client

Sales Area representative

Town .......... Date .........

Stockist, Client .............

Date of last visit .........

Unit ............

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Items</th>
<th>Sast month closing stock</th>
<th>Quantity sold between visit</th>
<th>Opening Stock</th>
<th>Closing Stock</th>
<th>Pending order in transit</th>
<th>Pending on dispatch</th>
<th>Detailing Pending bills</th>
<th>Retired if not given Reactions</th>
<th>Remark</th>
</tr>
</thead>
</table>
( ii )

A H A E X - M-2

Monthly Report for Sales Assistant

Name ..............

Period of Tour

From ............. To ............. Days

<table>
<thead>
<tr>
<th>Town Visited</th>
<th>No. of days worked</th>
<th>Calls made</th>
<th>Retailing</th>
<th>Business Secured</th>
<th>Pending orders</th>
<th>Balance stock</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>Effective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total
Survey particulars regarding the appointment of

M/s ................

as dealer

A. Survey particulars
1. Name of the party
2. Address
3. Name of the proprietor
4. Town
5. Nearest Railway Station
6. Distance from Delhi
7. Limited, Government or Private
8. Present Business
9. Product handled
10. Bank Reference
11. Railways freight
12. Security deposit

Sanction may kindly be accorded to appoint
M/s ................

as our dealer, for a period of ............

________________________________________

Signatures

________________________________________

Sales manager

Order :- Sanction is hereby accordingly to appoint the
above party as our dealer for the period
mentioned above.

h.D.
Complaint Report Form

A. Particulars of Complaints
   1. Party
   2. Address
   3. Item
   4. Packing
   5. Quality reported as damaged
   6. Value of goods reported as damaged
   7. Date of working complaints

   Signature of the Party

B. Report of the sales officer & his recommendations

C. Particulars of Sanction:
   1. Complaints Case No.
   2. Sanction sought for
   3. Sanction received up to date in the month Rs. .............

   Security
   Sales Officer

D. Order
   Allow credit for Rs. .....................
   for ..................... period ..................

   Marketing Manager
1. What type of decisions are you regularly called upon to make?

2. What type of information do you need to make these decisions?

3. What information do you regularly get?

4. What type of information would you like to get that you are not getting now?

5. What information would you want daily? weekly? monthly?

6. What magazines and trade reports would you like to see?

7. What specific topics would you like to be informed?

8. What type of information would help you in making major promotional decisions?
1. Information Systems for Modern Management.
   - Robert Throwbridge
   - Gosford J.
   - Stanfield L. Cytron
4. Information Management.
   - Phellip & Kotler
5. Electronics for you.
   - April 1982 issue
6. Serhals from Department of Electronics.
   - J., Feb., Marc. 82 issue
7. Industrial Times.
   - Feb., 82 issue
   - Robert L. Caione
9. Financial Times