CHAPTER III

PRESENT STUDY
INTRODUCTION

Recent liberalization in Indian economy has two major consequences for the corporate world: Intensification of competition and increase in growth opportunities. Increasing competition subjects competing organizations to many partially conflicting pressures, such as the need for sharper awareness of market developments and competitive moves of rivals, greater compulsion to cut costs, to respond to special needs of customers, quicker responses to the moves of rivals and the demands of customers, better coordination between various management functions, greater decentralization to meet local contingencies, greater resourcefulness and innovativeness, greater access to diverse expertise etc. These pressures require a multi-faceted response.

While there are studies available on strategic organizational responses of corporations to liberalization the studies dealing with decision support system (which is Information Technology based solution) as response to deregulation or liberalization are few.

What could be effective corporate response to liberalization? This is a significant question because if corporations do become the major engines of national economic growth, it is important that they perform efficiently.

Market friendly economic restructuring has two major implications. It intensifies competition through easier entry and greater foreign competition. It also opens up many opportunities for growth through the removal of regulations and artificial barriers on pricing and output decisions, investments, plant scales, mergers, acquisitions,
joint ventures, technology imports, import of foreign capital etc. It enables corporations
to expand, diversify, integrate and globalise more freely. Both these implications have
profound consequences for the effective management of corporations in a liberalized
economy.

**Significance Of the Study:**

Competition exerts several partially conflicting pressures on competing organizations.\(^1\) It requires high awareness of market developments and competitive
moves of rivals and considerable investment in scanning and intelligence gathering
mechanisms. It requires attempts to reduce costs through functional specialization and
standardization; but it also requires the organization to respond to special needs of
customers and this can impose significant trade offs between custom-tailored and
standardized outputs. Competition requires a quick response to the moves of rivals and
demands of customers and therefore a high order of coordination between the various
functions and departments of the organization. But centralized coordination may not
work when, as so often is the case, clientele, production and distribution facilities are
dispersed and clients have differentiated requirements. This sort of dispersion and
differentiation requires considerable decentralization, so that the organizational
requirement is high coordination despite decentralization. Competition also requires the
management to be resourceful and at least to some extent innovative. This again requires
a trade off between tight control of operations to contain costs and autonomy to

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\(^1\) Khandwalla P., "Properties of Competing Organizations", in Nystrom, P. and W. Starbuck. Handbook of
managers and staff to be resourceful and innovative in meeting competitive challenges. Competition is usually multifaceted, involving competition in pricing, product quality and variety, marketing, promotion, distribution as well as in acquiring inputs, and thus a competing organization must have access to diverse expertise; but expenses of availing this expertise must be kept under tight control to keep output costs low.

Corporate organizational designs vary from enterprise to enterprise, industry to industry, and economy to economy. Greater competition, especially when competition is multi-dimensional, poses a serious problem to the organization of coping with uncertainty. This uncertainty stems from competitive moves by domestic and with liberalization, by foreign rivals vis-à-vis price cutting, introduction of new or differentiated products, promotion campaigns, acquisition of distribution channels, advantageous locations etc. Each competitive move triggers chains of reactions which in turn trigger further reactions, rendering the environment turbulent. As organization theorists have pointed out, uncertainty makes planning of operations difficult.\(^2\) and organizations therefore need to resort to various uncertainty control measures. Some of these take the form of measures to reduce or avoid operating uncertainty. These include long term supply or delivery contracts, collusive pricing, heavy advertising to create brand loyalty, vertical integration to reduce uncertainty about input supplies or output off-takes and contra-cyclical diversification to offset cyclical fluctuations in the market.

segments the corporation is operating in. Some take the form of information acquisition and coping mechanisms. These include expert consultancy, long-range forecasting, market research, intelligence gathering mechanisms and group processing of market related information so as to pool information and judgments. Where there are a lot of local uncertainties, regional decentralization of operations may be resorted to. Where parts of the external environment are particularly ambiguous, specialised units to monitor specially turbulent aspects of the environment may be deployed. More and More mechanisms and more and more powerful uncertainty control mechanisms need to be deployed by the corporation as an economy moves towards globalization. The organization increasingly needs to become a strong information acquiring, information processing and quickly learning and adapting organism. In terms of mind set of decision makers, the shift has to be the inevitability of relatively rapid change and therefore to the readiness to abandon obsolete or untenable positions and practices and a good deal of tolerance for ambiguity and uncertainty. The operating culture needs to shift from bureaucratic one to organic, flexible, communication, interaction and expertise rich one.  

Multi-sided competition has another consequence. It differentiates the decision structure of the organization. A wide range of expertise is needed to cope with the numerous contingencies created by competitive environment and a wide range of

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organizational mechanisms need to be deployed (in the form of staff groups and responsibility centers) to cope with these contingencies. Such a response is not feasible in centralized organization. Inevitably therefore the organizations need to be decentralized and to opt for a relatively flat rather than a tall hierarchy. Culturally too, a structure differentiated by numerous specialised units would imply the existence of correspondingly numerous operating subcultures, each with its distinctive mode of conducting its operations. Under liberalization induced competition, therefore, the corporate organization is structurally and culturally likely to get much more differentiated as compared to that in a regulated, protected economy.

As Lawrence and Lorsch have pointed out, necessary though organizational differentiation, in certain circumstances be, unless it is compensated by powerful integrative and coordinative devices, such differentiation could tear the organization apart in welter of conflicts, confusion and lack of coordination.  

Structurally, such integrative devices are needed as participative or committee decision making so that diverse view points are synthesised, a cadre of versatile and dynamic managers that are trained to be generalists who can integrate various functional concerns and perspectives and respond quickly to market changes and a sophisticated management information and control system that provides critically

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important operating information regularly and periodically to decision makers so that remedial action can be quickly taken. Widely share core values and vision of excellence are also powerful integrators.\textsuperscript{7}

Thus competition, especially multi-faceted competition, requires the organization to deploy extensively uncertainty reduction, differentiation and integration mechanisms.\textsuperscript{8} A proliferation of these mechanisms renders complex the organizational design and management of the competing organization. Such organizational complexity can increase substantially the costs of organization's internal transactions.\textsuperscript{9} and the organization may resort to contracting out of several of its functions. Whether the organization retains or contracts out these various functions, the point of importance is that it must have access to the competencies implied by these functions.

The strategic responses required by competition are also noteworthy. Having to compete requires a sharper strategic focus: muddling through\textsuperscript{10} or implicit strategising\textsuperscript{11} may not suffice. The corporation needs to have a fairly clearly

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\textsuperscript{7} Khandwalla, P. "Organizational Designs for Excellence" (New Delhi: Tata Mc.GrawHill, 1992), chapter 4; Peters, T. and R. Waterman, "In search of Excellence; Lessons from America's Best run companies" (New York: Harper and Row, 1982).


\textsuperscript{9} Williamson, op. cit.


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conceptualised short term strategy based on its core competencies.\textsuperscript{12} and a long term strategy based its long term vision, learning and adaptive capacity.\textsuperscript{13} It needs to conceptualise whether its competitive strategy is to be anchored in cost advantage, or quality or servicing a niche or brand equity or product innovation or a particular combination of these generic strategies.\textsuperscript{14}

According to J.D. Singh, the increasing similarity of products poses the principal difficulty to the firm as to how to get customers to perceive its products as different from other competing products. The solution perhaps, lies in reexamining the market segmentation approach used, product proposition offered and product perception of the customers. The basic task involved in such situation is to use the non-price strategy, maneuvering it to help the firms strengthen customer loyalty, create brand preference, attract floating customers and switchers from other brands, improve the image of the firm and expand the market size.\textsuperscript{15}


\textsuperscript{14} Porter M. Competitive Strategy( New York: Free Press, 1980).

\textsuperscript{15} Singh, Dr. J.D: Non-Price Marketing Strategies, Indian Management, September 1986, p.28.
The Indian economy is passing through a dynamic phase of major restructuring and realignment commensurate with global changes and development. There are also significant changes taking place in the energy sector in India. Given the prospects of high growth of the Indian economy, it would not only be important to ensure that the supply of energy is adequate in physical terms but also that it is obtained at the least possible costs to the country.

Economic reforms in India have followed an approach. In the process, the country has avoided some of the cataclysmic effects that have accompanied economic reforms in several other countries. The first challenge that the Government of India had to tackle was that of bringing out reforms at the macro level. The having been largely met, the next logical stage is the micro-economic reforms i.e. reforms in the more critical sectors of the economy. The reasons why the hydrocarbons industry assumes priority in this regard are as follows.

The experience of the two oil price shocks of 1973-74 and 1979-80 as well as the crisis in oil markets before and during the Gulf war of 1990-91 are much too recent to be ignored. The Indian Hydrocarbons sector needs to be strengthened to absorb any future dislocations in the global oil market.

The oil and gas industry worldwide is going through a period of reforms which has important lessons for India that are of value in restructuring our own hydrocarbon industry. While the decade of 1970s was a period of growth and emergence of nationalized entities, 1990s represent a period of reforms in these national oil
companies and other organizations in the industry. In fact, the oil industry represents the cutting edge of economic reforms in the present decade in many countries.

Sundarajan's committee report states that the demand for hydrocarbons compared with primary source i.e. coal in India is expected to grow vigorously in the coming decades resulting from economic growth, population changes, increases in disposable household income and changes in capital intensity of the Indian economy. The essence of restructuring the hydrocarbons industry is to introduce and enhance the conditions of a competitive market through primarily domestic and international competitions. It is only thus, that the consumer surplus can be maximized and efficiency gains that would arise, get passed on to the public. Competition, domestic or international, will stimulate continued improvements in productivity of the hydrocarbon sector by upgradation of the quality of the petroleum products. The domestic industry as well as the environment can only gain from the competition. Several other countries in the world have successfully implemented reforms in the hydrocarbon industry by adopting a variety of policies and procedures to attain higher levels of efficiency and high economic pay-offs.

The mechanisms for achieving certain national goals need to be through an active use of the market. The conventional practice of command and control has no place in the future of the hydrocarbon industry or in any industry for that matter.

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16 "R" group report "Hydrocarbon Perspective 2010 - Meeting the Challenge" (R group has been set up Ministry of Petroleum and Natural Gas and the report has been prepared under the convenorship of Sunderajan, Chairman and Managing Director of BPCL)
However, given the strategic nature of oil and gas industry, the role of information technology in assisting the management of the enterprises in this sector remains paramount. This role would be discharged only through the establishment of expert and decision support systems.

The management of downstream oil company sales function offers the industry, a distinct competitive advantage of containing the costs. Retail sales which account for 63% of the total sales are a major thrust area that offers immense potential for the containment of costs through the effective use of Information Technology. The management of physical distribution including stocking and distribution involve decisions of critical nature. It is only in recent years that distribution and wider business philosophy of logistics have come to receive serious attention from both the business and academic worlds. A comprehensive system thinking rather than a functional tunnel vision is needed for the retail sales management activity.

India's oil sector is dominated by such government-owned enterprises as Oil and Natural Gas Commission and Oil India Limited in the upstream (i.e. exploration and production) segment and Indian Oil Corporation, Hindustan Petroleum Corporation Ltd, Bharat Petroleum Corporation Ltd. and Indo-Burmah Petroleum, Madras Refineries Ltd. and Cochin Refineries Ltd. in the downstream i.e. refining and marketing segment. The entire oil industry has been operating under a total regulation through Administered Pricing Mechanism, which is being dismantled. Opening up and deregulation of the industry for private sector participation pose a challenge to the various aspects of oil
industry like quality, price and service. Consequently, the impact of liberalization would be crucial on the sales management function of the public sector undertakings in general and HPCL in particular.

The globalization process in the oil industry needs the improvement in the productive base of information technology in the hydrocarbon industry so as to achieve international competitiveness. Substantial changes have taken place in other countries of the world in the development and application of technology in various segments of the hydrocarbon industry. There is evidence that the technology gap in certain parts of the India’s hydrocarbon industry in relation to the state-of-the-art global practice has actually widened recently. This is particularly true in case of IT (Information Technology) in the hydrocarbon industry. IT is transforming the oil industry around the world but we are yet to exploit fully the potential of this technology of enormous importance for a competitive edge. This process is to ensure that not only is the best information technology approach is used by the oil companies in India, but also (a) that capabilities within the country are built effectively to ensure smooth adaptation and further development of these technologies for the benefit of Indian Organizations and (b) that the Indian hydrocarbon industry becomes capable of international presence in the global scenario. The globalization process in the oil industry needs improvement in the information technology of the global standard to enhance the efficiency of the sales management activity of the downstream oil industry in general and HPCL in particular. Against this background, it viewed that the present study on “Retail Marketing in HPCL - Expert and Decision Support Systems Approach” and assumes greater significance.
Review Of Literature:

This section of the chapter is on the study of review of literature or studies on public sector enterprises, and expert systems in the area of marketing.

It is pertinent to refer to Gorwala report\textsuperscript{17} on the efficient conduct of state enterprises. The report says that the test of success to any enterprise is not an easy matter. A concern may make a profit and not yet be a real success. The report further states that by selling what the buyer wants at a price which the seller commands, the selling concern can show very successful results. Public enterprises must be judged solely by the standard of efficiency which implies in respect of every unit of production of goods and services, minimum cost and requisite quality.

The Administrative Reforms Commission(ARC)\textsuperscript{18} was of the opinion that the Public Enterprises are owned by the state. That they are owned by the state does not mean that they have to be run by the Government. The effectiveness of the top management is the most decisive of the factors on which the success of any enterprise depends.

\textsuperscript{17} A.D.Gorwala, The report on the Efficient Conduct of State Enterprises. 1951, pp.17 & 27.

Excessive dependence on Government departments did not provide enough incentive to public enterprises for promoting commercial viability. The problem of marketing management did not pose itself seriously during the era of initial enthusiasm in Public Enterprises in India. However, as these infant undertakings grew in number and moved to the threshold of chronological puberty, it became obvious that paternal affection of the Government and the people could not remain unabated.\textsuperscript{19}

Kotler and Levy\textsuperscript{20} in their article ‘Broadening the concept of marketing’ point out that the whole range of marketing activities and application of marketing principles can be applied to a wide range of organisations. Irrespective of the nature of enterprise, it has to invariably understand consumer behaviour towards its products, the possible market segments, the necessary attributes to be built into the product and setting up a thorough marketing information system. It is assumed that irrespective of the type of Public Enterprise, these are essential for an efficient conduct of operations.

Kapoor and Singh\textsuperscript{21} in their study on “Marketing Planning in Indian Companies” conclude that marketing was already recognised in Public Enterprises. They support this view by stating that marketing managers were appointed for long range and short

\textsuperscript{19} Omprakash. “Norms of Marketing Management for Public Enterprises in India”. 21st All India Commerce Conference, Indian Journal of Commerce, December, 1967,p.155


\textsuperscript{21} M.C.Kapoor and J.D.Singh, “Marketing Planning in Indian Companies - A Pilot Study”, Indian Management, New Delhi, April,1975.
range planning and industry statistics were utilised. Their study further states that the Public Enterprise consulted the management consultancy services, advertising agencies when they introduced new products. However, they concluded that Marketing Planning Sophistication Index (MPSI)* was higher for private enterprises compared to the Public Enterprises.

C.P Rao in his paper on "Survey of Research and Marketing" states that, as the marketing academicians and practitioners are in the dark about the nature and functioning of marketing management in the country, development of marketing theory which can be considered as appropriate for India in particular and perhaps, for the developing countries in general, has not yet been attempted. In this area of marketing management functioning, there is an immediate need for exploratory studies into the marketing management practices of the various types of industries and trading activities in the country.²²

It is of importance to refer to the Expert Committee on Public Enterprises set up by the Government of India.²³ The Committee covered a number of general issues of Public Enterprise management. The committee formulated its views on management of Public

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* MPSI took into consideration the Marketing objectives, organization for marketing planning, marketing information systems and forecasting.


Enterprises in this country. The Committee noted that marketing is one of the weakest areas with in the public enterprises studied by the Committee. In the Public Enterprises studied by the Committee, marketing organizations were not clear on their own role and the areas of contribution. There is also hardly any creative marketing aimed to provide consumer satisfaction. Even market surveys and demand studies were inadequate, not to speak of applying forecasting techniques to determine future demands. The Committee recommended that orientation of marketing in the Public Enterprises should be changed from purely sales transaction as at present to a more innovative and creative function.

An important proposition relating to the function of the Public Enterprises can be found in the contribution by Virmani. He states that the Public Enterprises should streamline their functioning so that prices of their products are competitive in the market. Prices and managerial efficiency are two important variables affecting surpluses of Public Enterprises. Prices in the Public Enterprises operating in monopolistic situation should take realistic assessment of costs based on optimal utilization of capacities and resources.

A study by Singh makes an analysis of arrangement of marketing in large sized companies in public and private enterprises. In most of the companies surveyed, a high level of marketing concept was found. However, only 19 per cent of the companies

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24 M.R. Virmani, “Prices, Profits and Pattern of Investment in Public Enterprises”, Center for Public Sector Studies, New Delhi, 1984, p. 299

were making use of modern management methods for marketing purposes. Among the Public Enterprises the ones dealing in industrial goods were managing their marketing function in a better way than consumer goods companies.

Several Public Enterprises from the developing countries are internationalising their operations, with a few even turning into multinational corporations (MNCs). The study by Shekhar and Khandwalla presents evidence from 36 Indian Public Enterprises on their internationalisation orientation and discusses the motives as well as factors facilitating and inhibiting it. The organization design appropriate for internationalisation are discussed. It notes the potential opportunities and threats that the internationalising Public Enterprises may pose to MNCs from developed countries and public policy issues pertaining to Public Enterprise internationalisation.

Singh in his paper mentions that one of the reasons for the poor performance of Public Enterprises is that the marketing function in this sector is not performed in a systematic manner. He also mentions that very few of the enterprises in this sector are marketing oriented and most of them are either production or sales oriented.

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The relevance of the modern marketing process and system to the operation of Public Enterprises, in the conceptual and strategic sense is still a nascent area in the existing literature, say Rao and Tagat.\textsuperscript{28} The contribution by Rao and Tagat\textsuperscript{29} on the analysis of marketing concept and strategy in Public Enterprise is worth noting. They have developed a model termed as "Growth Cycle Model of Public Enterprises". The model explains that a Public Enterprise has two dimensions namely, public dimension and enterprise dimension. The model further outlines the different phases through which a Public Enterprise is likely to pass. The phases are sheltered phase, supportive phase and self-propelling phase. The author point out that as a Public Enterprise moves from sheltered phase to supportive to self-propelling phase, it assumes enterprise dimension in greater proportions. The self-propelling phase arises when a strong Public Enterprise forges ahead to become stronger by exploiting opportunities available in the changing environment. It implies that the Public Enterprise is in for evolving and developing strategic marketing to gain a foothold in the market place. Finally, the authors substantiate that the marketing concept need no longer be considered anathema to Public Enterprise operation. On the contrary, it acts as the dominant instrument to broaden the vision of the Public Enterprise with out surrendering national perspectives. Strategic marketing is the ultimate point of convergence for both the public and private enterprise, irrespective of variances in their initial objectives, organizational differences and end differences.

\textsuperscript{28} K.L.K Rao. Marketing Perspectives of Public Enterprises in Developing Countries. International Center for Public Enterprises, Ljubljana, 1986, p.9

\textsuperscript{29} ibid.
David Chambers\textsuperscript{30} in his work on "Learning from Markets" concludes that different lessons can be drawn from the examination of actual markets. The public sector managers have to adopt a market orientation.

Raja K. Iyer, Karan H. Briggs and Lawrence L. Schkade in their paper titled "Implementing Expert Systems in Public Sectors: Issues and Guidelines for Strategies"\textsuperscript{31} presented a framework for the knowledge engineering process that is consistent with or congruent to the managerial decision making process. They stated that problems in implementation are well known to decision and management scientists and information systems professionals and academicians. Most attempts to solve managerial problems through out-of-ordinary solutions, such as mathematical programming and information system solutions, have been viewed as changes which met with stiff resistance in organizations. In many organizations the very acceptance of scientific approaches to decision making was questionable, be it due to mind set, ignorance or apathy. Management science methods were full of promises and information technology was touted as a panacea for organizations. Yet both have met with considerable resistance and lack of acceptance by organizational participants. They have placed significant emphasis on the need to learn from lessons of the past by stating that decision sciences

\textsuperscript{30} David Chambers, "Learning from Markets", Public Money and Management, Vol 8 No.4. Winter 1988, pp. 49-50

and information systems professions should provide a set of guidelines for knowledge engineering profession so that it may avoid similar pitfalls and disappointments. The paper also identifies what managers need to understand about the knowledge engineering profession in order to have an appreciation of what this new and growing scientific profession can and cannot provide in support of the managerial decision making process.

Among the notable findings emanating out of the review, the most important ones are: strategic marketing orientation, an effective marketing information system and expert system development are important prerequisites for marketing management in public enterprises. It is also evident that there is hardly any study exclusively on expert systems and marketing in the oil industry.

OBJECTIVES OF THE STUDY

1. To inquire into the efficiency of the retail marketing activity of HPCL.
2. To examine the decision making practices of managers of HPCL concerning retail marketing activities.
3. To develop an expert and decision support system if necessary to improve the retail marketing activity.

Methodology

1. In order to achieve the aforementioned objectives of the study the following fact finding techniques and qualitative techniques have been used, as the study of this nature can not be conducted with any single research or data gathering technique.
2. Researching the application and problem.
3. Site visits to the Depots / Bottling plants and Retail outlets.

4. Observation of the work environment in all the units of the Regional office.

5. Questionnaires and in-depth interviews with customers, dealers and the officials or the end users in the system.

The secondary sources of data were the sales manual, accounting manual, task instruction letters, the periodic sales reports, monthly news letters, manual files and registers and the computerised files in the depot and bottling plants.

The primary data was obtained from three sources i.e. customers, dealers and the employees. While the primary purpose of the survey was to identify the list of the activities in Retail Sales management that can feasibly be handled by expert or decision support system, the end users during the interview mentioned a number of requirements (the additional reports that they required) that the researcher felt worth noting though the development of a system that provides all those is clearly outside the boundary or the scope of this research. The same are mentioned in Appendix B. The respondents were encouraged to freely express the requirements irrespective of whether or not they formed part of the research scope as not doing so was likely to reduce the respondent’s interest in continuing to participate in the interview.

Sampling:

The study was carried out on the targeted segment of end users and dealers of HPCL. The end users included MS (Petrol) users like two wheeler owners / car owners and
drivers, HSD (Diesel) users like Trucks/LCV/Jeep owners/drivers, tractor owners/drivers and the LPG (Cooking Gas users) like housewives and eating houses/restaurant owners. A sample of 100 MS (Petrol) users, 100 HSD (Diesel) users and 100 LPG (Cooking Gas) users are selected on the basis of random sampling technique from the cities and towns selected for the study.

The analysis of the user sample indicated that 56.9% are owner driven and 43.1% are driver driven vehicles that come to HPC outlets for fueling. Majority of the respondents (41%) belong to the age group of 36-50, followed by 38% of the respondents belonging 26-35 age group and 13% belong to age 18-25 age group. The remaining 8% of the respondents belong to the age group of above 51 years. Out of the total respondents 76.7% are regular customers and 23.3% are casual customers.

The study was also carried out on target segment of dealers. The dealer respondents are also selected on the basis of random sampling technique. A sample of 20 dealers are selected from each category viz. Retail outlet (Petrol Pump) dealers and LPG dealers.

Scheme Of Presentation

The study is presented in eight chapters. The first chapter describes marketing functions, retail sales function and expert and decision support systems. Chapter two deals with the overview of oil industry in general and HPCL in particular. In chapter three, significance of the study, review of literature, objectives of the study, methodology, scheme of
presentation and limitations of the study are presented. Chapter four contains the analysis of marketing activity in HPCL. Chapter five presents sales maximization sub-system, chapter six indent scheduling sub-system, chapter seven deals with the transportation cost minimization sub-system and chapter eight presents the summary.

Limitations

The study involved development of knowledge base for certain decisions in retail sales management by eliciting knowledge from the experts in the field. The experts considered for extracting the knowledge were the ones who enjoyed certain recognition for their expertise in a specific domain, among their colleagues. Hence the expertise that the knowledge base contains is limited to the synergetic expertise of the experts involved and the computer. However, certain mathematically based decision activities like supply point determination, tank truck shipping scheduling and replacement strategy are devoid of the aforementioned limitations.