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MARKET INFLUENCE ON THE TECHNOLOGY IN THE ENERGY SECTOR - A STUDY OF INDIAN SCENARIO

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ABSTRACT

The liberalization of economic policies in India, in 1990, effected massive changes in the market scenario right from consumer products to corporate systems and shown remarkable economic growth in past two decades. Marketing management as a business discipline, which focused on the practical application of marketing techniques and the management of a firm's marketing resources and activities, came into its real existence. Rapidly emerging forces of globalization led firms to market beyond the borders of their home countries, making international marketing highly significant and an integral part of domestic market and marketing strategy of individual firm / company in India. Generally, whenever new technology is put in the market, awareness is generated through various types of advertisements and consumers would adopt. In case of Power sector, it is the market which is demanding for the new technology and Power Equipment manufacturers are struggling to bridge this technology gap. Indian Power equipment manufacturers have an additional issue with technology. They have to essentially depend upon the imported technology in the form collaboration or joint ventures. Availability of this advanced technology is very expensive and rare, in the wake of Indian open policy. This paper while looking at the dilemma (whether to depend upon the external technology or develop their own) of the Indian power equipment manufacturers like BHEL, L&T, etc, concludes that Indian Power sector companies should develop their own technology than to depend upon external help all the time. It would be beneficial to total economy of India.

KEYWORDS

Conventional or Fossil fuel based energy, Non-conventional energy sources, Giga watt, Power Equipment Manufacturers.

INTRODUCTION

The liberal economic policies of India unleashed in 1990s have resulted massive changes in the market scenario right from consumer products to corporate systems and remarkable economic growth in past two decades. Marketing management as a business discipline, which focused on the practical application of marketing techniques and the management of a firm's marketing resources and activities, came into its real existence. Rapidly emerging forces of globalization led firms to market beyond the borders of their home countries, making international marketing highly significant and an integral part of domestic market and marketing strategy of individual firm / company in India. The role of a marketing manager became very significant based on the business size, corporate culture, and industry context. For example, in a large consumer products company, the marketing manager may act as the overall general manager of his / her assigned product. To create an effective, cost-efficient marketing management strategy, firms must possess a detailed, objective understanding of their own business and the market in which they operate. In analyzing these issues, the discipline of marketing management often overlaps with the related discipline of strategic planning.

Traditionally, marketing analysis was structured into three areas: customer analysis, company analysis, and competitor analysis (so-called "3 Cs" analysis). More recently, it has become fashionable in some marketing circles to divide these further into certain Six "Cs": customer analysis, company analysis, company R&D or technological capability, collaborator analysis, competitor analysis, and analysis of the industry context.

When it comes to Power Sector Industry, for marketing, the R&D or technological capability of the company and the Collaborators Capability (if the company is in collaboration with any foreign company for technology) becomes very important. Strength of the company also gauged on the R&D investments and technological base of the company in the market.

Competitor analysis is required in terms of Technology Strengths.

Recent power policy of Government of India is encouraging even private sectors to establish the power plants. Even foreign collaborations are taken to establish power plants and power production in India. In this context it becomes necessary to make Customer analysis to understand as to which customer can pay for better technology.

As the competition keeps becoming more and more fierce, market analysis turns to be business analysis. Power Sector Business is generally a corporate business and not consumer business or consumer durables. Hence, the business strategy adopted would consist of competitors and technology the company has employed in the business. Customer's awareness and the competitor's technological edge would take away the cake than the price. Though price plays the major part, Technology also plays the equally important role in the Power sector of India. Study of the technology along with price and service capability of the company would determine its position of the company in the market.

In case of power sector technology, management becomes most important and goes hand in hand with regular marketing activity.

It will not be out of context to recall the disaster caused on the very grate, multi-faceted, most promising Public Sectors like HMT and ITI. Many such public sectors went down the drain, since they did not change their technology or manage the technology as per the market requirements. Some organizations like BEL, HAL could survive since their products were meant for Defense, Government of India. BHEL could not only survive the paradigm shift, it dared the recession without the help of Government. BHEL has been able to manage the technology fairly well till date by changing the collaborations now and then. It is able to meet the market demands by the borrowed technology. Since the international giants are coming into India there by converting Indian Power sector market as the International Market, one has to wait and see strategies of BHEL. Whether BHEL would continue their strategy with borrowed technology or will they mind to establish and develop their own technology in the coming days.

This thesis is to examine the inner strengths of Public Sectors in the area of Power sector in India and to suggest real growth for them to become the India's Multi-National company.

REVIEW OF LITERATURE

Since, the power sector is the most important corner stone of the development in India, lot of researches are going on this field. There are good no of books, publications, seminar proceedings etc. are available. Government of India itself has established Integrated Energy Policy and keeps on reviewing every year.

1. The Important of the salient features of **Integrated Energy Policy** Issued by Press Information Bureau Government of India Planning Commission are given below:

- PSUs operating in the energy sector must operate with autonomy and also full accountability** to ensure incentives for adequate investment through their own resources and improvements in efficiency in energy production and distribution.
- India will have to pursue all available fuel options and forms of energy and must seek to acquire new energy sources abroad.
- India must actively promote technologies** that maximise energy efficiency; demand side management, conservation and energy security and this must be done by encouraging domestic research into such technologies and free access to suitable energy related technologies available abroad.

PSUs should consider the appropriate technology to generate the power efficiently.

2. An article, "**Integrated Energy Policy Approved by India**" written by Mr Narsi Santhanam, and published in website EAI Catalysing Cleantech in India (<http://eai.in/blog/2009/01/integrated-energy-policy-approved-by.html>) :

The Union Cabinet recently approved an **Integrated Energy Policy for the country and a monitoring committee**, to be chaired by the Cabinet Secretary, will be set up to review the progress of the policy's implementation.

Currently, there are 5 separate ministries Coal, Petroleum and Natural Gas, Atomic Energy, Power and Non-Conventional Energy sources each preoccupied with issues in its own turf.

The integrated policy is expected to explore alternative technologies and possible synergies that would increase energy system efficiency and meet requirement for energy services. It would allow for relative pricing of different fuels taking into account both their efficiency in use and convenience as well as the amount of pollution they generate. As per report, an integrated policy is also expected to bring in level playing field for all energy players large or small, public or private, domestic or foreign.

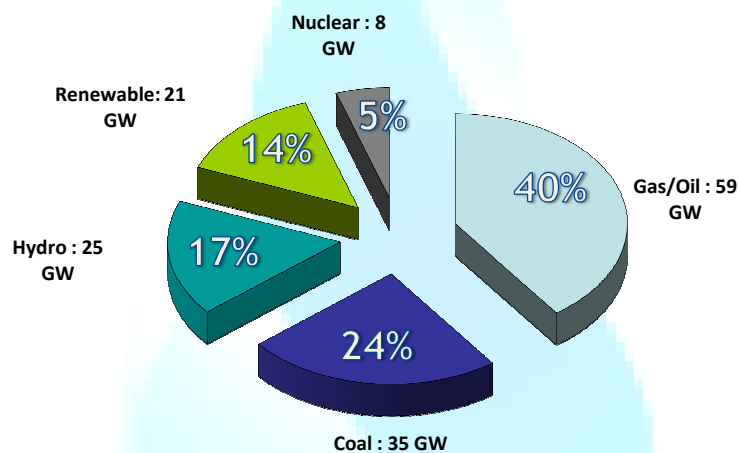
3. **As per the Expert Committee** (Established by Government of India) Report on the Integrated Energy Policy of India it is necessary to establish a National Energy Fund (NEF) in order to encourage the R&D Activities in the Energy sector. Relevant portion of the Point No.5 Chapter IX - Energy R&D is given below:

"Based on these considerations, we recommend the following:

A National Energy Fund (NEF) should be set-up to finance energy R&D. Our expenditure on R&D excepting for atomic energy, which as on today provides less than 3 per cent of our total electrical energy supply, is miniscule compared to what industry and governments spend in developed countries.

.....There is, thus, a strong case for funding by the government either directly or through fiscal incentives. The latter accounts for the bulk of government support in the developed countries. Fiscal incentives, however, have not resulted in significant expenditure on R&D by Indian industry. An annual allocation should be made by the government for energy R&D. Individuals, academic research institutions, consulting firms, private and public sector enterprise could all compete for grants from this fund for identified and directed research."

4. Global Power Generation Landscape ... 2006-2015



Source: World Energy Outlook 2006 OECD

- Coal and natural gas account for largest increments in fuel consumption for electricity generation worldwide.
 - Demand outlook will remain robust and growth will be driven by a mix.
 - Issues of energy security – coal with clean technologies will be the preferred choice for new power plant equipment
 - Significant potential for hydro power in India, China and Latin America.
5. **Bharat Heavy Electricals Limited (BHEL)**, India's Premier Power Generating Equipment Manufacturer, is in the business of engineering, manufacturing, and supplying of Power plant equipment and has the capability of taking EPC contracts. The government of India holds 67.7% equity in BHEL. With 14 plants & 8 service centres, BHEL has the capacity to deliver 15,000MW pa and planning to reach 20,000MW pa by FY12. BHEL has been able to enjoy about 60-70 % of Indian Market share due to their improved deliveries, capex investments, and slight improvement in technologies now and then. BHEL has been able to give better PLF than its competitors. There does not seem to be any difference between the deliveries of plants of BHEL, Chinese, Russian and Korean origin, while deliveries of Russian suppliers have been terrible. Overall BHEL has been growing very well. At the same time its projections for the coming years also seems to be very good. Their DCS business is also very much ahead of the competition in India.

NEED FOR THE STUDY

Prior to 1991, before the Indian Economy getting opened the Public Sectors were enjoying full-fledged government support. No Government company was allowed to buy or import any equipment / commodity from the private organization, if the said equipment is manufactured by another Government company in India.

At the same time Multi-National companies, who were eyeing at the Indian business were fairly open for the collaboration and technology transfers to Indian companies very easily. PSUs of Power generating Equipment manufacturers (BHEL) enjoyed the collaboration with various companies, worldwide for their various products like Boilers, Turbines, Transformers various valves. Apart from the mechanical equipment collaborations, the high-tech collaborations for the control and instrumentations were also entered into with world's leading organizations viz., Siemens for manufacturing drives and ABB for Manufacturing DCS Systems. M/s NGEF, a state (Karnataka) owned company, had collaboration with M/s AEG Germany and similarly, Kerala government owned KELTRON also enjoyed various collaborations for manufacturing control instruments. M/s Instrumentation Limited Kota had good lot of collaborations with various companies for manufacturing instruments and DCS for thermal power plants. Though the collaborations got ended, these companies continued the collaboration with same company by paying heavy Royalty or entered into arrangement with another company of the world.

To give an example, the situation was almost same as automobile situation before Maruti Suzuki entered in the market. Indian consumer had to be satisfied with same old Ambassador or Premier Padmini. The day new automobiles started coming in the market, these two companies closed their operation. Similarly after 1991, NGEF completely closed; KELTRON and IL are on the verge of getting closed. It is only BHEL, which has survived due to its internal operational changes. As far as technology is concerned BHEL is still borrowing from one or the other World Giants in the field.

BHEL is the premier organization of India in the ever growing business of Power Generating Equipment Manufacturers. BHEL's business is intact and indeed improving. A key catalyst for the stock re-rating is winning of large power orders in 2011, which will not only prove its competitiveness but also lead to a consensus upgrade for FY 2012-13E. The key ingredients taking BHEL into a new orbit are:

- its speedy indigenization of super-critical technology,
- Capacity building and vendors development to improve delivery, and cost cutting on economies of scale and improving labour productivity.

This report on evaluating PSU's long-term structural business would address key market myths and analyse what are considered to be some real concerns. Also look for list of BHEL orders and evaluation of Chinese plants.

If BHEL is looking to be the Indian Multinational and would like to develop to be on par with big giants in field like M/s GE US, Siemens Germany, Hitachi Japan, etc... then should it not develop its own technology? How much R&D expenditure it has to invest? How long they can survive on the borrowed technology? How long BHEL in specific and India at large will be able to afford the high cost technology from outside? As far as the marketing figures like market share, turnover, profit and other parameters are concerned the organisation is in the leading position. But it is not growing at the same rate as that of the Market Growth.

This report / Thesis on evaluating PSU's long-term structural business would address key market myths and analyse what are considered to be some real concerns. Also look for list of BHEL orders and evaluation of Chinese plants. This thesis would also look to answer the question if Power sector of India still needs to borrow the technology from outside instead of re-inventing the wheel or it is necessary to develop its own technology. This thesis would also like to address urgency of the indigenous technology development.

OBJECTIVE OF THE STUDY

Power sector market is growing at a very high rate in the world as well as in India. Though the figures like Turnover and Profit of the existing PSUs are growing and highly encouraging on the paper, it is not in congruence with the Market growth. Market share is also slowly depleting. One of the major indication is the competition is entering the market with better technology. The objective of this paper is to:

1. Get the insight in to the Technology aspect of the power industries to assess the competitive edge.
2. Study if the Indian Power Sector companies are left with no alternative to make big investments in R&D Activities to develop their own technology if not today, tomorrow to be a global player. As Indian Market is turning to be the International Market due to the liberal policies of the government, it is becoming imperative that Indian companies may not get the state of the art Technology from the multinationals Siemens, ABB, Matsushita, GE US etc.

These are the Prime questions this paper is likely to answer as the conclusion

SCOPE OF THE STUDY

1. Study the path of technological development under taken by the global giants in the power sector like General Electrics USA, Siemens Germany, and Hitachi Japan.
2. Power Sector Market Potential and Market Scenario in India and the effect of Government Policies.
3. Technology status of the Indian Public sectors vis a vis the world scenario
4. Chinese low cost equipment and their effect on the Market share of Public sector companies.
5. Private companies entering into the Power / Energy business both as the Suppliers / Manufacturers of power equipment and as users.
6. Due to the Government policies, Indian market is getting converted as the International Market. The effect of this on the Indian Markets.
7. The concerns of the Utility organisations like NTPC, NHPC and various SEBs of India. Their demands on the Technology of the power equipment.

RESEARCH METHODOLOGY

The aim of this thesis is to find out the Market-Forces on the technological changes in the public sectors of India. Descriptive and Analytical method of research will be used.

1. An extensive survey of the literature about the Public sectors has to be taken up to collect the data i.e. Ex Post Facto Research. Technology changes over a period of time and need for the same will be recorded.
2. An extensive interview with top officers of Utility organisations like NTPC, KPCL, SEBs and Tata Power etc. would be conducted to establish their Technology preferences. A questionnaire method will also be taken up with the other officers. This is to establish the gap between the available and aspired technology.
3. A similar interview and questionnaire method will be adopted to collect the information from the public and private power equipment manufacturers.
4. A study on the development path of the world leaders like GE USA, Hitachi Japan and Siemens Germany would be taken to establish the national and international technological gap.
5. A study will be conducted to establish the influence of the Chinese low cost products on the technological developments in India.

SUGGESTIONS & RECOMMENDATIONS

In order to take advantage of the existing opportunities in the equipment industry, it is crucial that the domestic manufacturers have to step up their manufacturing capacity and boost their technological base. Further, with increasing race for supercritical technologies, building up clean technological know-how and expertise should be necessitated.

The nonconventional energy sources like Wind Mills and Hybrid Systems, Small Hydro Power stations, Biomass energy, etc to be given boost by the government with appropriate incentives. This will reduce the burden on the fossil fuel based energy generation.

It is necessary to conduct the energy audit on the power intensive industries like Aluminium Industries, Steel Industries, and Big 5 star Hotels etc

Continuing programmes to develop decentralised solar systems and other types of decentralised renewable electricity strategies, could help in the achievement of this important goal of reaching the rural India.

Energy-related research in particular plays an important role in driving forward economic growth. They should take energy related researches very seriously.

CONCLUSIONS

The following are the most important points one should note about the electricity in today's world of sound bites and takeaways:

- Electricity is morphing from a commodity into a premium form of energy
- Demand for more high-quality electricity will continue growing unabated
- The link between economic prosperity and quality electricity is tightening
- Traditional fossil fuels will be increasingly scarce, expensive and polluting
- The smart grid vision offers unique solutions to meet customers' needs and society's need for a sustainable, high-growth, low-carbon economic model.
- Infiltration of Chinese equipment and their quality. India's strategic planning in the area of electricity generation would go hay wire if the under-quality products are purchased. India can hardly compromise on the low quality front for lower value of the products at this juncture of the development.

FUTURE SCOPE OF STUDY

There are many characteristics of the Indian electricity sector that makes its future a compelling study. First, the demand growth is bound to be much higher. This necessitates that the whole power sector be re-planned from scratch. Second, while coal is an important indigenous energy resource, the coal quality is much lower than elsewhere which results in coal not being the most economic option: coal imports or other power supply options might be more cost-effective. Third, renewable resources, with the exception of solar, are limited in India, particularly when this possible supply is juxtaposed with demand growth forecast for the coming decades.

Since, this area is continuously and rapidly growing sector, it necessitates a continuous study to use the existing power resources most effectively and efficiently depending upon time and situation.

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