

# **THE KEY ISSUES AND CHALLENGES IN THE CONSTRUCTION CHEMICAL INDUSTRY IN INDIA**

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## **ABSTRACT**

Construction chemical is one of the niche segments from the specialty chemical segment of the chemical industry. Construction Chemicals are specialty products that are used in structures to increase their life, and also to impart additional protection from environmental hazards. Certain chemical products also help in minimizing the quantities of cement and water generally required during the construction.

In India there are a large number of buildings which are more than 40 to 50 years and which need renovation. The new laws provide for demolishing existing old structures and constructing new high rise buildings. Consequently, therefore the demand for construction chemicals for renovation of these existing buildings has been on the rise in the short term. Additionally, the tropical climate, and the inferior construction material used by builders also cause many of these building to need repairs much earlier. Sub-standard construction chemicals have been used in a large number of construction projects.

The new construction projects market is also expected to increase the demand for construction chemicals. The construction market is expected to grow at more than 30% p.a. for the next few years. There is no published data available indicating the exact growth rate of the construction market. The Indian construction chemical market is highly competitive and fragmented, with large numbers of small and specialized suppliers. In addition to small distributors who import these chemicals, there are a large number of global construction companies who have their local manufacturing operations in India. This market is likely to grow at the rate of around 10 – 15% p.a. in the next few years.

Most companies tend to be highly specialized in serving their specific market segment. They generally supply a few product types of different technology/application methods, quality and price to solve specific construction needs such as waterproofing, leakages or fireproofing. In general, the distribution of each particular product involves installation/application and most importantly a warranty on product performance. As a result, it is necessary that distributors of construction chemicals specialize in solutions to specific construction needs.

A variety of construction chemicals are used in most large-scale construction projects as well as projects of special design and engineering, depending on their specific needs. These materials include concrete admixture, surface treatment, waterproofing, grout, floor topping, coating, sealer and floor hardening. Therefore, the potential demand for construction chemicals expands to cover the creation of infrastructure, high-rise buildings and industrial plants. In addition, construction chemicals also cover the renovation and repair of such large-scale projects. In fact, renovation and repair make up a substantial volume of construction chemical sales in India.

Construction chemicals comprises of a number of different products such as cementations, cement admixture, cold-applied products, hot-applied products, membranes, acrylic, epoxy, resin, and sealant /adhesive. Because the market has a large

**number of suppliers and products, the majority of suppliers are small distributing companies without a large enough market share to effectively influence the overall market application of construction chemical.**

**This paper analyzes the key issues and challenges this fledging industry faces. The paper is based on both desk and field research and more specifically on two major players in the market.**

**The paper also attempts to evaluate the growth strategies followed by these companies.**

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## **THE INDIAN CONSTRUCTION CHEMICAL INDUSTRY**

Construction chemical is one of the niche segment from the specialty chemical segment of chemical industry. Construction Chemicals are specialty products that are used in structures to increase their life, and also to impart additional protection from environmental hazards. Certain chemical products also help in minimizing the quantities of cement and water generally required during the construction.

The Indian construction industry is very large and is important to various sectors of the economy. The construction industry received a fillip beginning FY03, with the government showing increased focus towards developing a strong and sound infrastructure setup in the country. With the present emphasis on creating physical infrastructure, massive investment has been planned during the Tenth Plan. The construction industry is playing a crucial role in this regard and is gearing itself to meet the challenges. It consumes 40-50% of the National Plan outlay and contributes 20% of GDP.

The construction industry has had its fair share in the overall growth of the Indian Economy. With exciting prospects ahead, there is an increased emphasis on high quality construction requiring detailed designing, good workmanship, and the selection of appropriate building materials. Building structures would require protection from natural hazards and industrial corrosives and regular maintenance to sustain for a longer duration of time. Chemicals used in construction impart these qualities to structures.

### **Types of Construction Chemicals: -**

Construction Chemicals can broadly be categorized into five groups:

1. Concrete and Mortar Admixtures.
2. Water Proofing Compounds.
3. Floor Hardeners.
4. Protective Coatings and Resins.
5. Adhesives and Sealants.

## COMPARISON BETWEEN CONSTRUCTION CHEMICAL AND CONSTRUCTION INDUSTRY GROWTH RATES –

\*The figures are in Rs. Crore

	2002-03	2003-04	2004-05	2005-06	2006-07	CAGR %
CC Industry Turnover*	750	855	992	1130	1500	18.06%
Rate of Growth of CC Industry	13%	14%	16%	18%	20%	
Construction Industry Turnover*	31078	36015	42885	48679	51200	14.20%
Rate of Growth of Construction Industry	16.55%	15.88%	19%	22%	23.70%	

CC=Construction Chemical

Source: Chemical Weekly

In the above exhibit we can see that the growth rate of the Indian Construction Chemical Industry is consistent. This shows that the application of construction chemical in construction works is increasing gradually. The end users are coming to know about its usage. But to give a healthy boost to the construction chemical industry there are certain weaknesses and threats that need to be addressed which we will see in the further part of the paper.

### OUTLOOK AND POTENTIAL OF THE INDIAN CONSTRUCTION INDUSTRY

#### SWOT ANALYSIS –

#### STRENGTHS:

##### Emerging Industry:

The Construction Chemical Industry is at a nascent stage. So there is a long way to go for the industry. The life of the industry goes with the construction industry, which is the end user of the Construction Chemical products. It is estimated that the life of the Indian Construction Chemical Industry will last atleast for fifteen years.

##### Huge Growth Potential:

The Indian Construction Chemical Industry has a huge potential to grow. Even at today's nascent stage the industry is growing at the rate of fifteen percent, which is almost double than that of the current GDP rate of India. Today the end users are not aware of the construction chemical usage and its benefits. When the awareness among

the end users will increase the industry will definitely grow with much rate than at which it is growing today.

### **Huge Export Contributor:**

The Indian Construction Chemical Industry contributes considerably in the country's exports. Around twenty percent of the industry turnover is achieved through exports. The major exports are to US, Europe, Germany and the SAARC nations. Hence the chemical segment supports at a considerable level to earn the foreign exchange.

### **Improves the Productivity:**

The construction chemicals improves the productivity of the construction sector by increasing the life of the structures, decreasing the abrasions, increasing bond strength and other qualities which the chemicals impart to the construction works if used on correct time and in correct manner.

### **Adds Value:**

The construction chemicals adds value to the constructed structures, concrete, mortars as well as by making them dust proofed and other value adding properties of the construction chemicals. It improves the lifestyle of the place where it is used.

### **Sophisticated Construction Input:**

The construction chemical is a sophisticated technique that supports the construction industry to get the desired or improved results from the products or structures so constructed.

### **WEAKNESSES:**

#### **Improper Customer Services:**

The industry is not emphasizing on the marketing activities. As a result there is lack of technical personnels in the marketing department of the organisations. The repercussion results in improper customer services.

#### **Costly Products:**

The use of the construction chemicals increases the cost to the developers by two to five percent. Also the standard products are costlier than that of the sub standard products. Moreover construction chemicals are value-adding inputs for the construction industry. The chemicals add value or improve the productivity of the structures or works. So there is not necessary to use the products. Even if the chemicals are not used the projects can be developed.

#### **Low Skilled Labour:**

The construction chemical industry is less explored by the chemical industry technicians. Also the industry is at the nascent emerging stage. Therefore it is difficult to get the skilled labour for the industry processes.

#### **Low Emphasis on Marketing:**

One of the weaknesses of the organised industry is costly products. There is lack of technical marketing professionals for the industry. The industry personnels emphasize low on marketing activities. This is because the marketing expenditure will increase the cost for the company, which is already one of the weaknesses.

**Low Awareness:**

Around eighty five percent of the construction industry personnels are not aware of the concept of construction chemicals. They are not aware of the productivity improvement and value addition for the construction works if the chemicals are used on proper time and in proper manner.

**OPPORTUNITIES:**

**SAARC Countries:**

The SAARC countries lack the well organised construction chemical industry. This is a great opportunity for the Indian Construction Chemical Industry to target the SAARC countries for the penetration of their products in the country where there is lack of branded and improved products.

**Exports:**

The cost of manufacturing is low in India as compared to that of the western nations. Also the organised player not compromise in the quality and hence there is a good opportunity to target the other western nations where the construction activity is increasing.

**Low Labour Cost:**

The labour cost in India is lower than that of in the western nations. If the labours are endowed with better skills the cost of production can be decreased.

**Foreign Direct Investments:**

The Government's decision to introduce hundred percent FDI in construction industry has opened a great opportunity for the industry growth. The overseas organisations will improve the quality of construction and hence will increase the use of standard construction chemical applications in the construction industry to give better quality of construction work products.

**Expenditure in Construction Sector:**

As in the beginning we saw the growth rate of the construction industry, the Government has realized that the Nation will only progress with a sound infrastructure that will conjoin the Nation as one. The Government has increased the outflows for the construction activities of the country. The huge projects like NHDP, PMGSY has brought a good opportunity for the Indian Construction Chemical Industry.

**CRAMS:**

Contract Research and Manufacturing Services (CRAMS) is the new emerging concept of the emerging industry. The Construction Chemical Industry is a problem solver industry. Hence it needs huge investments in Research & Development

activities. Due to the criticalities involved in the chemical processes it becomes difficult for any company to manage the business processes from procuring to providing service for customers. Also in the competitive business world plays a vital role in the economies of scale for the production activities. The new emerging concept of CRAMS has a huge potential to restructure the industry for the favorable results.

## **THREATS:**

### **Stricter Environment Regulations:**

The Environment Regulations are getting stricter day by day. The Government is passing laws to conserve the environment. These regulations if not maintained by the industry can hamper the growth of the Construction Chemical Industry.

### **Lack of Technical Guidance:**

The result of the application of construction chemicals depends mainly on the way or manner in which the chemical has been used. The application of the chemicals require an excellent technical guidance to get the best results out of such costly products. Today in India the end users are not skilled in the application of these chemicals. So they require a technical guidance to develop the skills required for the application.

### **Government Policies:**

#### **In-Country Policies –**

The Government has no constraints on the usage of construction chemical in the structures or in the Government projects except the projects funded by world development organisations. This provides an unfavorable opportunity for the developers to save the input cost to get a better quality structures.

#### **Export Policies –**

The inconsistent export policy hampers the decision of the exporters. The Government frequently changes the export policy. The policy is not consistent throughout the year putting exporters in a muddle to take decisions. Hence the exporters are unable to meet their obligations on time or they don't construction chemical export orders.

### **Depreciating Foreign Currency:**

During the last financial year 2005 – 2006 the value of dollar depreciated considerably. This hampered the exports of the overall goods. The depreciating foreign currency decreases the purchasing power of the importers, hence hampers the exports.

### **Port Regulations:**

#### **Labour Unions –**

On the ports the handling of goods cannot be done by the outsider. Moreover the port labour are unproductive and unskilled to handle the critical material like construction chemical. This increases the wastage of the goods.

### **Obsolete Equipments –**

The obsolete handling equipments lead to pilferage and wastage of the chemicals on port. This affects the export order. Either the exporters have to dispatch the order considering the wastage quantity or the delivered order is less than that of the order placed with the exporter by the importer.

### **Lack of Research & Development:**

The Research & Development investments of the Indian companies is less than that of the MNCs. The construction chemicals are used only for a specific purpose either to add value or to improve productivity of the existing product. So a continuous R & D effort is necessary for the growth of the industry.

### **Unskilled End Users:**

A large chunk of construction industry labours are unskilled or low skilled. Whereas the construction chemical application requires an adept knowledge to get the best results. Hence many a times the customers are not satisfied with the results of the construction chemical.

### **Sub Standard Products:**

The introduction of sub standard products manufactured by the small players for the sake of making sound profit is spoiling the industry growth. The users using sub standard products don't get the results by the applications, developing unfavorable perceptions in the customers as well as end users for the future growth of the industry.

## **RATIONALE OF THE STUDY**

**This paper has thus so far analyzed the key issues and challenges this fledging industry faces. The paper is based on both desk and field research and more specifically on two major players in the market. The players are ; Pidilite Industries & Choksey Chemicals.**

**The paper also attempts to evaluate the growth strategies followed by these companies.** This study attempts to compare and bench mark the top Indian construction chemical companies. It builds on research carried out by the authors regarding certain theoretical propositions. It mainly compares the growth strategies employed by these Indian firms in the current scenario and environment of operation.

## **RESEARCH METHODOLOGY AND DATA COLLECTION**

This study is primarily descriptive and exploratory in nature based on secondary data and information from Chemical Weekly, Chemical Business and other published literature and Annual Reports of the selected companies. In this research, concept of relative measurement has gained prominence in evaluating growth of firms. The key issues remain the selection of criteria, parameters of evaluation and data analysis methods. These multiple criteria were identified on basis of literature survey of past research on growth strategies and other conventional research methods. However, it should be appreciated that stakeholders may have different perspectives on the importance of various criteria.

Data regarding the growth and performance for the past five years was collected, Financial data of these construction chemical companies was sourced primarily from Chemical Weekly & BSE

(Bombay Stock Exchange) to maintain a standard benchmark. The further gaps were filled by utilising the Annual Reports for the last five years of the short listed companies publicly available or through websites.

Data regarding the business plans and strategies of the companies was derived from the recent Annual Reports for qualitative comparisons and analysis. The main individual sources were the various issues of

- Harvard Business Review
- Chemical Weekly
- Chemical Business
- Annual Reports of Companies

An attempt has been made in this research to understand the differences in strategies being evolved by the top firms. The growth of top companies of the world are evaluated in terms of the financial performance. Certain hypothetical propositions were examined based on the quantitative performance data of the companies. The dynamics of strategies is being captured using the concept of strategic drivers/enablers. Several important enablers were identified from literature review. Then strategies of select firms is analyzed in terms of enablers to identify the differences and patterns to draw relevant conclusions and future implications.

## **GROWTH STRATEGIES**

Growth strategies have been researched from multiple perspectives. These may be organic or inorganic in nature. Organic growth involves growth either into new products or in new markets. Growth is realized through and mainly fuelled by: (Groves 2000)

- Geographic expansion of markets
- Higher market share in current markets
- New market share in new segments

Diversification and integration are also types of organic growth. Inorganic growth on the other hand involves, mergers and acquisitions and joint ventures.

According to study carried out on the IT Industry in India (Anandaram 2003) growth is driven by

- Leadership and vision
- Differentiated approach
- Marketing investment
- Alliances and partnerships
- Cultivation of local market

Another similar study (Naidu 2003) shows that large size offers a firm the flexibility in offering products and services. Acquisition of resources and skills is another path to expand capabilities.

- System integration
- Project Management Skills
- Partnerships
- Serial entrepreneurship
- Merger and Acquisitions

For growth many companies have also used moves beyond core successfully (Zook 2004, Zook *et al.* 2003). Zook prescribed six ways to move into adjacent space: expand along the value chain, grow new product or services, use new distribution channel, enter new geographies, address new customer segment and move into a new space with a new business built around strong capability. In leveraged

growth strategies (Hagel III 2002), the thrust is on expanding sales without sacrificing profits, by adopting “outsourcing”. The McKinsey Growth Pyramid model argues that businesses should develop their growth strategies based on:

- Operational skills
- Privileged assets
- Growth skills
- Special relationships

Finally, one should also appreciate that Growth matures out but what should continue is

- tough processes of screening
- acceptance of lower growth in matured/developed economies
- looking for a new growth platform
- deeper appreciation that growth too follows a mature and die cycle

Growth is sustained through

- Value addition
- Increase in productivity via operational efficiencies and technical skills acquired
- Vertical integration
- New production techniques
- Acquisitions
- Partnerships and collaborations

Growth strategies should revolve around

- building and defending dominate market share in geographical areas
- market expansion to other geographic market segments
- Profit maximization and risk minimisation thru selling of existing product in new market
- Attract new socio demographic segments
- Develop new core services – innovate new products
- Move towards concentric diversification
- Conglomerate diversification

In related research (Ahmad *et al.* 2004) proposes a 5-I Framework for Winning viz. Inspiring Leadership, Innovative Strategy, Internal and External Stakeholder Relationship, Identity, Implementation. CEO of General Electric, Jeffrey Immelt (2006) considers organic growth a six part process involving Innovation, Technology, Globalisation, Commercial Excellence, Leadership, Customer Satisfaction.

Peter Gutman (1964) found that growth rates ranged up to 76.7% annually. Firms with highest growth rates were those which

- (a) Chose industries where sales increased more rapidly than the economy as a whole.
- (b) Concentrated on market segments within the industry, which grew more rapidly than the industry.
- (c) Entered the market earlier than the competing firms.
- (d) Operated in multinational markets.

A study (Chevalier *et al.* 1974), which included three U.S. industries, revealed that some growth strategies were more effective than others i.e.

- (a) Strategy that focused on products whose markets was growing.
- (b) Strategy that involved assuming leadership role in a market segment which is growing.

- (c) Strategy that involved competing in specific market segments rather than trying to compete with giants.

Importance of a well-chosen strategy that is being well executed to deliver strong financial results in the present and in the future has been recognized. The growth of the various Companies are usually financially evaluated on basis of various models such as Sales Revenues, Compound Average Growth Rate, Return on Capital Employed, Economic Value Added, Market Value Added, Long Term Capital Invested, etc. Lately, a new metric called Relative Value of Growth (RVG) has been proposed by Mass (2004). However, all the respective models of evaluation could not be employed in this study due to the lack of Data. The available data has been best utilized to investigate the various hypothetical propositions that have emerged from the Literature Review.

## **THE ENABLERS AND THE PROPOSITIONS**

On basis of Literature Review carried out it can be summarized that the growth of any particular company is boosted significantly by some or all of the following enablers

- Value Innovation
- Customer Centric Approach
- Operational Efficiencies
- Human Skill Management—Flexibility and Scalability.
- Inspiring Leadership
- Technical Capabilities
- Financial Strength
- Collaborations in New Markets
- Mergers and Acquisitions in segments of low growth
- Global Operations
- Cost Leadership
- Diversification
- Operations in sectors of High Margin

Thereafter a survey was taken up to assess the enablers identified on basis of Literature Review. It was found that, on an overall basis the companies accord the maximum importance to Operational Efficiencies and Customer Centric Approach. Human Skill Management, Financial Strength, Global Operations and Executing Work in Sectors of High Margin are also given importance as enablers.

Moving further a few more propositions were formulated for the current study, based on experience, interactions with experts in industry and popular assumptions, for the Indian context. Sample size does not permit statistical testing, but objective observation of systematic data structuring (mostly in tables) has been used. This study attempts to examine the same propositions.

## **ANALYSIS OF THEORETICAL PROPOSITIONS IN THE INDIAN CONTEXT**

The analysis begins with the examination of a similar set of theoretical propositions relevant in the Indian context.

Detailed discussions with the manufactures of construction chemicals and other knowledgeable persons indicated that of all the above parameters, the most crucial parameters (measured on a scale of 1 to 5, with 1= least important and 5= most important) are as follows:

Sl. No	Parameter	Ranking (1- Least important, 5 - very important)
E1	Value Innovation	3
E2	Customer Care Approach	4
E3	Operational Efficiencies	4
E4	Human Skill Management Flexibility and Scalability	3
E5	Inspiring Leadership	5
E6	Technical Capabilities	3
E7	Financial Strengths	5
E8	Collaborations in new markets	2
E9	Mergers and Acquisitions in segments of low growth	2
E10	Global Operations	2
E11	Cost Leadership	4
E12	Diversification	1
E13	Operations in sectors of high margins	3

Source: Authors Own

Surprisingly, Human skill, Technology superiority, collaboration in global markets, mergers and acquisitions are not considered to be a very crucial input / performance parameter for this industry.

Financial Power is considered to be one of the most important parameters followed by inspiring leadership and cost leadership.

***P1 Top Companies are Characterized by Consistent Performance or Rankings.***

Pidilite Industries and Choksey Chemicals have consistently maintained their position in the Indian Construction Chemicals Industry and have clearly been the leaders all throughout.

**Table 1:** National Rankings of Indian Top Construction Chemical Companies

S. No.	Company Name	Rank 2006	Rank 2005*	Rank 2004	Rank 2003	Rank 2002
1.	Pidilite Industries	1	1	1	1	1
2.	Choksey Chemicals	2	2	2	2	2

Source: Indian Chemical Council

***P2 To Maintain the Market Leader Position or to Improve it on a Sustained Basis, it is Imperative for a Company to Register Increase in Sales Turnover Consistently.***

This proposition is very easily justified by examining the Table 2 of recorded Annual Turnovers of the companies. It can be seen that all the selected companies that have improved their rankings or have maintained their position as market leader, have recorded an increase in turnover in the long term.

**Table 2:** Turnovers of the Selected Indian Companies (in Million Rupees)

Company	2006	2005	2004	2003	2002
Pidilite Industries	13092	10617	8998	7647	6678
Choksey Chemicals	8000	7600	7025	6340	5200

Source: 1) Annual Reports 2) Company Sources

***P3 In Successful Companies the Profit Growth Generally Exceeds the Sales Growth.***

**Table 3: Sales Growth and ROCE (% Year on Year)**

<i>Company</i>	<i>Parameter</i>	<i>2006</i>	<i>2005</i>	<i>2004</i>	<i>2003</i>	<i>2002</i>
Pidilite Industries	Sales Growth	23.31	17.99	17.66	14.51	15.70
	ROCE	17.45	21.69	13.52	7.27	6.84
Choksey Chemicals	Sales Growth	5.26	8.18	10.80	21.92	N.A.
	ROCE	13.48	10.50	14.00	10.93	N.A.

Source: 1) Annual Reports 2) Company Sources

In the case of these companies (in Table 3), the ROCE of these companies have been significantly higher in recent times indicating the booming business and good times the Indian Construction Chemical industry is going through.

## **KEY FINDINGS**

Trends over the last few years have indicate that the growth areas in this industry are admixtures and repair system products. Increase in manufacturing activities and industrial growth is expected to trigger higher usage of flooring compounds. Companies should look to develop application based products.

Brand building will prove to be the most fruitful exercise for the companies. Demand for user and application friendly products will grow faster than traditional products while value added products will be a focus area for sustained growth. Selective acquisitions and mergers and industry consolidation will enhance product portfolio and expanding market reach of companies.

This study was taken up on the highly relevant background of high prospective growth of the Construction Chemical industry in India To gear up and meet the future challenges, as well as competition from the global level companies, the Indian companies are required to grow in size and volume. Also, a preliminary literature review put forth growth as the most cherished value for companies with sustained market leadership.

To carry out the study, first Literature Review was undertaken. On basis of the same, a few theoretical propositions and growth enablers were identified. These theoretical propositions were analysed for selected two top Indian companies in the field of construction chemicals selected on basis of their rankings and quantitative performance. Very interesting findings emerged from comparison of firms on key performance parameters of competitiveness with respect to growth in the study.

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## REFERENCES

- [1] Ahmad, A. and Chopra, O.P., 2004. Passion to Win-New Winning Companies Develop & Sustain Competitive Edge, New Delhi, Excel Books.
- [2] Anandaram, S., 2003. Issues Facing SMIT's. IIMB Management Review, March, pp. 92-95.
- [3] Chan, K.W. and Mauborgne, R., 1997. Value Innovation: The Strategic Logic of High Growth. Harvard Business Review, January-February, pp. 172-180.
- [4] Chevalier, M. and Catry, B., 1974. Don't Misuse Your Market Share. European Business, Winter-Spring, pp. 43-50.
- [5] Groves, F.L., 2000. The Road That Lies Ahead, Professional Builder, July, pp. 83-84
- [6] Gutman, P., 1964. Strategies of Growth. California Management Review 6(4) Summer: 31-36.
- [7] Hagel III, J. 2002. Leveraged Growth: Expanding Sales without Sacrificing Profits. Harvard Business Review, October, pp. 69-77.
- [8] Kefalas, A.G., 1979. Towards a Sustainable Growth Strategy. Business Horizons, April, pp. 34-40.
- [9] Kotler, P. and Armstrong, G., 1996. Principles of Marketing. Prentice Hall of India Pvt. Ltd.
- [10] Mass, N.J., 2004. Relative Value of Growth. Harvard Business Review, April, pp. 102-112.
- [11] McKinsey Growth Pyramid. Available at: [www.tutor2u.net/business/strategy/mckinsey\\_pyramid.htm](http://www.tutor2u.net/business/strategy/mckinsey_pyramid.htm) Accessed December 2006.
- [12] Naidu, B.V., 2003. Relevance of SMIT's. IIMB Management Review, March, pp.96-98
- [13] Stalk, JR. G, Pecaut, D.K. and Brunett, B., 1996. Breaking Compromises, Breakaway Growth. Harvard Business Review, Sep-Oct., pp. 131-139.
- [14] Stewart, T.A., 2006. Interview of Jeffrey R. Immelt. Growth as a Process. Harvard Business Review, June, pp. 60- 70.
- [15] Troughton, F., 1970. Growth and Organisation in Business: Their Roots in Nature. Management International Review 2(3): 85-96.
- [16] Zook, C., 2004. Beyond Core—Expand Your Market Without Abandoning Your Roots. Boston, USA, Harvard Business School Press.
- [17] Zook, C. and Allen, J., 2003. Growth Outside the Core. Harvard Business Review, May-June, pp. 79-92.
  
- [18] V.S. Rathi & Pradip Manjrekar, The Indian Construction Chemicals Industry: An Overview, Chemical Weekly, Vol. LI, July, 2006 (Publisher : Sevak Publications, Mumbai.)
  
- [19] V.S. Rathi, The Indian Chemicals Industry : An Overview, The Analyst, March, 2007 (Publisher, ICFAI University Press)
  
- [20] Pradip Manjrekar & V.S. Rathi , , The Indian Construction Chemicals Industry: An Overview, Chemical Business, September, 2006 (Publisher : Color Publications Pvt. Ltd., Mumbai.).