CHAPTER II

RESEARCH METHODOLOGY AND INDUSTRY PROFILES
Chapter II: Research Methodology and Industry Profiles

Section I: Research Methodology and Research Design

The current study is being pursued to achieve the following Research objectives:

- To understand the prevalent capital structure of Indian companies in different industries.
- To understand if the leverage decisions differ across industries in India.
- To compare the existing studies on the developed nations for their applicability on the developed nations.
- To provide empirical evidence to the capital structure literature on the Pecking Order theory and the Trade off theory and Agency Theoretic Framework, in the context of an emerging market like India.

(A) Research Hypothesis: The capital structure decisions are very important for any company. The Industry membership of a company will have a strong impact on its capital structure decisions. Understanding the differences, if any, in the capital structure of different industries will enable one to work towards devising the optimal capital structure for the company. Taking into consideration, the diverse literature available on the theories of capital structure, the following hypotheses have been set for the current study.
Hypotheses:

Null Hypothesis and Alternate Hypothesis (Ho and Ha)
Ho - Firm’s in different industries in India have similar capital structure
Ha – Firm’s in different industries in India do not have similar capital structure

Sub Hypothesis:

For each of the dependent variable i.e Financial Leverage and Debt Equity, the following Null Hypothesis (Sub Hypothesis) have been tested for the six independent variables, i.e Size, Tangibility, Liquidity, Growth, Profitability, Cost of Borrowing

For Dependent Variable: Financial Leverage

1. Independent Variable – Size:
   a. Ho - Firm size has a positive relationship with financial leverage of a firm (Larger firms tend to have more financial leverage)
   b. Ha - Firm size does not have a positive relationship with financial leverage of a firm.

2. Independent Variable – Tangibility:
   a. Ho - Tangibility of a firm has negative relationship with financial leverage of a firm (Firms with more tangible assets will use less financial leverage)
   b. Ha - Tangibility of a firm does not have a negative relationship with financial leverage of a firm

3. Independent Variable – Profitability
a. Ho - Profitability of a firm has negative relationship with financial leverage of a firm (Financial leverage choice of a firm is negatively influenced by the profitability of a firm)

b. Ha – Profitability of a firm does not have a negative relationship with financial leverage of a firm

4. Independent Variable – Growth
   a. Ho - Growth of a firm has positive relationship with financial leverage of a firm (Financial leverage is positively influenced by the growth rate of the firm)
   b. Ha – Growth of a firm does not have a positive relationship with financial leverage of the firm

5. Independent Variable – Liquidity
   a. Ho - Liquidity of a firm has negative relationship with financial leverage of a firm (Financial leverage of a firm decreases with increase in liquidity of a firm)
   b. Ha – Liquidity of a firm does not have negative relationship with financial leverage of a firm

6. Independent Variable – Cost of Borrowing
   a. Ho - Cost of borrowing has a negative relationship with financial leverage of a firm.
   b. Ha – Cost of borrowing does not have a negative relationship with financial leverage of a firm

For Dependent Variable: Debt-equity

1) Independent Variable – Size:
   □ Ho - Firm size has a positive relationship with debt-equity ratio of a firm (Larger firms tend to have more debt)
Ha - Firm size does not have a positive relationship with debt-equity ratio of a firm (Larger firms tend to have more debt)

2) Independent Variable – Tangibility:
   Ho - Tangibility of a firm has negative relationship with debt-equity ratio of a firm (Firms with more tangible assets will use less debt)
   Ha - Tangibility of a firm does not have a negative relationship with debt-equity ratio of a firm (Firms with more tangible assets will use less debt)

3) Independent Variable – Profitability:
   Ho - Profitability of a firm has negative relationship with debt-equity ratio of a firm (Debt-equity choice of a firm is negatively influenced by the profitability of a firm)
   Ha - Profitability of a firm does not have a negative relationship with debt-equity of a firm

4) Independent Variable – Growth:
   Ho - Growth of a firm has positive relationship with debt equity ratio of a firm (Debt-equity choice is positively influenced by the growth rate of the firm)
   Ha - Growth of a firm has a positive relationship with debt equity of a firm

5) Independent Variable – Liquidity:
   Ho - Liquidity of a firm has negative relationship with debt-equity ratio of a firm (Debt equity of a firm decrease with increase in liquidity of a firm)
   Ha - Liquidity of a firm does not have a negative relationship with debt-equity of a firm

6) Independent Variable – Cost of Borrowing:
- Ho: Cost of borrowing has a negative relationship with financial leverage of a firm
- Ha: Cost of Borrowing does not have a negative relationship with financial leverage of a firm.

(B) **Definition of variables used for the study:**

For the current study six independent variables are being studied for their impact on two dependent variables. Thus, the relationship model for two separate dependent variables has been studied.

<table>
<thead>
<tr>
<th>Table 2.1 - Definition of Independent and Dependent Variables</th>
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<tbody>
<tr>
<td><strong>SNo.</strong></td>
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<table>
<thead>
<tr>
<th><strong>Dependent Variable</strong></th>
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<td><strong>SNo.</strong></td>
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Source: Compiled by Researcher
(C) Sample Design

The present study is based on data for 10 Indian industries over a period of 11 years from i.e. 1998-2008. The selected industries are: -

1. Automobile
2. Cement
3. Coal
4. Entertainment
5. Information Technology
6. Petroleum
7. Pharmaceutical
8. Power
9. Steel
10. Telecom

The rationale behind selecting these industries is that they are in different stages of industry cycle and also have different demands for capital. Cement, Steel, Power are highly capital-intensive industries whereas Information technology, pharmaceutical are less capital-intensive industries. The purpose of this research is to investigate the inter-industry differences in capital structure and the determinants of capital structure for a sample of 824 companies spread over 10 industries for a period of 11 years. For selecting the firm to be part of the sample, financial data for the firm should be continuously available for the 11 years of study. The rationale behind this approach was to make the sample more inclusive. The number of firms selected from each industry is shown in Table C-ANNEXURE.
(D) Data Source

For this study secondary data has been used. The basic financial data of 10 industries for a period of 11 years has been obtained from Prowess database, provided by Center for Monitoring Indian Economy (CMIE). The basic financial data has been further analyzed and the independent and dependent variables have been calculated for the 10 sample industries.

The profile of the 10 sample industries has been prepared using published reports by CRISIL - credit rating agency along with data from CMIE.

(E) Model Specification

In order to test the validity of the Static Trade-off and Pecking Order theories to explain the capital structure of Indian companies, the following multiple regression model is used-

\textit{Equation (1)}
\[ \text{FinLev} = \alpha + \beta_1 S + \beta_2 T + \beta_3 \text{LIQ} + \beta_4 \text{GWT} + \beta_5 \text{PRF} + \beta_6 \text{CB} + e \]

\textit{Equation (2)}
\[ \text{DE} = \alpha + \beta_1 S + \beta_2 T + \beta_3 \text{LIQ} + \beta_4 \text{GWT} + \beta_5 \text{PRF} + \beta_6 \text{CB} + e \]

Where FinLev is financial leverage, DE is debt-equity ratio, S is firm size, T is tangibility, PRF is profitability, CB is cost of borrowing, LIQ is liquidity of the firm, GWT is growth of assets, \(\alpha\) is constant and \(e\) is the error term.
(F) Statistical Tools for Analysis

In order to test the predictive power of two of the most important capital structure theories, i.e Static Trade-off theory and Pecking Order Theory on the selected Indian Industries, multiple regression models have been used to find out the influence of independent variables on the dependent variables. Two separate multiple regression equations will be tested for each of the selected ten industries.

‘t’ test has been carried out to check the level of significance of the regression coefficients. The data has been checked for autocorrelation and multicollinearity. Durbin-Watson (DW) test has been applied to detect any autocorrelation amongst the residuals. Variance Inflation Factor (VIF) has been used to check for multicollinearity problem. ANOVA test was performed to test the differences in capital structure of the ten selected industries.

For segregating the sample into high and low leverage, the median value has been taken as the cut-off point. Firms with debt ratio above the median value has been taken as the cut-off point. Firms with debt ratio above the median have been categorized as highly levered firms. According to size, all selected firms have been divided into Largest, Medium, Small and Smallest. Largest firms are those with size in excess of the 75th percentile of the distribution. Smallest firms are those with size of upto the 25th percentile of the distribution. Firms with size between the 25th percentile and 50th percentile of the distribution are classifies as Small firms. Similarly, firms with size above 50th percentile but upto 75th percentile of the distribution are classified as Medium firms.
Section II - Profile of Selected 10 Indian Industries

(I) Industry Profile: Cement Industry

The cement industry is one of the core sectors for growth of the country. Cement is one of the most basic construction materials; hence, an essential item for the country’s infrastructure development. Cement production commenced in India as early as 1914. The first cement unit was set up at Porbandar in 1914 with a capacity of 1,000 tonnes per annum.

Evolution of the cement industry in India can be broadly classified into three periods — the period up to partial decontrol (up to 1982), the period up to total decontrol (1982-89) and the period after total decontrol (after 1989 to date).

Industry structure

The Indian cement industry comprises 140 large cement plants with an installed capacity of 217.8 million tonnes, as of March 2009, and with more than 365 mini cement plants constituting 11 million tonnes of effective capacity.¹ The industry can be broadly classified into three categories namely pan India players, regional players and marginal players.

- The first category consists of country majors – Holcim-controlled ACC and Ambuja (40.7 mn tonnes) and Aditya Birla-controlled Grasim Industries, Century textiles and UltraTech Cement (45.8 mn tones).
- The second category consists of players whose presence is restricted to one region but with a stronghold in markets of their respective operations. This

¹ CRISIL RESEARCH, JULY 2009
segment includes players like Lafarge (East), India Cement (South), JP Associates (North & Central), Shree Cement (North), Birla Corp, Binani Cement, Dalmia Cement and Madras Cement etc. This segment controls 77 million tonne capacity, which is approximately 37 per cent of the industry size. Several players from this segment like Lafarge, India Cement and Binani Cement are planning to set up capacities outside their present region(s) of operations for expanding their reach and for tapping opportunities present in other regions as well.

- Third category consists of stand-alone players, which constitute remaining 43 million tonne of the Indian cement industry. Players like CCI, J&K Cement, Panyam Cement, Penna Cement etc fall in this category.

Table 2.2- Industry Structure

<table>
<thead>
<tr>
<th>No. of companies</th>
<th>Share of capacity (mn tonnes)</th>
<th>% Share of total capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large players (Pan India)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Regional players</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Standalone players</td>
<td>41</td>
<td>34</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>50</td>
</tr>
</tbody>
</table>

Source: CRISIL Research July 2009

Cement industry — Regional in nature

Cement is high volume and low value commodity; transporting it beyond a distance makes it unremunerative for end users, making it regional in nature. Cement consumption varies regionwise because the demand-supply balance, per capita income and level of industrial development differ in each state and hence, in each region.
In 2007-08, the leader in the consumption side of the cement industry consisted of South India (30 per cent) followed by North India (20 per cent), West India (20 per cent) and East India (15 per cent), Central region (15 per cent).²

**Seasonality of demand and cyclicality of the industry**

Demand declines during monsoons due to slowdown in construction activity, consequently, making cement demand seasonal. Monsoons extend from June to September across India (except in parts of Tamil Nadu and Kerala, where they last from November to January). Consequently, demand is lowest during the July-September quarter and highest during the January-March quarter. Demand peaks in March and is low in August.

**Cost elements:**

There are four major costs associated with cement production:

1. **Power and fuel cost:** Cement industry is power intensive with power and fuel cost constituting approximately 30-35 per cent of cement cost of sales. While state electricity boards meet a large portion of power requirement, more and more companies are currently opting for captive power plants to reduce their cost and dependence on state electricity boards where power cuts are frequent. During 2007-08, 81.8 million tonnes of cement was produced using Captive Power Plant, which works out to be 46.8 per cent of total cement production.

² Source: CMA, CRISIL RESEARCH
2. **Raw material cost:** The raw materials cost for cement industry primarily constitutes of limestone cost and accounts for nearly 25-30 per cent of cost of sales. They are clustered around ten deposits of cement, which are Satna, Gulbarga, Chandrapur, Bilaspur, Chanderia, Nalgonda, Yerraguntla, Saurashtra, Himachal Pradesh and Thiruchirapalli. As in March 2008, there were around 121 million tonnes of capacity around those clusters, which constitute 70 per cent of the industry size.

3. **Selling expenses:** Cement manufacturing facilities are generally located near the limestone reserves an thus far from the end user market. Cement is a low value high volume commodity so transporting accounts for a significant cost. It constitutes around 25-30 per cent of cost of sales.

4. **Other expenses:** Other expenses include employee cost, administration expenses, repair and maintenance charges etc. These account for around 10-15 per cent of the cost of sales.

**Demand drivers**

Cement demand is primarily derived from four segments namely housing (60-65 per cent), infrastructure (20-25 per cent), commercial construction (10-15 per cent) and industrial segments (5-10 per cent). Cement demand has grown at healthy pace of over 8.8 per cent compounded annual growth rate (CAGR) during last 5 years (2002-03 to 2007-08) on back of strong demand witnessed in its end user segments.

**(II) Industry Profile: Coal Industry**
For India, like most developing countries, coal is the most important energy resource. In fact, it accounts for around 53 per cent of the country's total energy needs. India is the third-largest producer of coal in the world and has reserves of around 38.9 billion tonnes. During 2008-09, India's total coal production increased by around 7.8 per cent to 493 million tonnes from 457.1 million tonnes in 2007-08. Coal prices in India are currently governed by CIL (Coal India Limited). All subsidiaries of CIL reported a jump in production in 2008-09. From 2003-04 to 2008-09, production has grown at a CAGR of 5.7 per cent. In 2007-08, domestic production accounted for 90 per cent of the total coal consumed, while the rest was imported. There was a shortage of approximately 11 per cent in 2008-09 in coal consumption, mainly due to growth in demand for coal.

Coal reserves in India

India has huge coal reserves — 267.2 billion tonnes as of April 2009. Of this, proven reserves are estimated to be 105.8 billion tonnes. Indian coal deposits are spread over 27 major coalfields, which are mainly confined to the eastern and central parts of the country. In April 2009, lignite reserves in the country were 32.4 billion tonnes, out of which, over 80 per cent were found in Tamil Nadu.

Policies and Regulations

The coal industry operates under a strictly controlled regime and is still under government control, after being nationalised in 1973. Since nationalization, there have been legislative changes in the sector, which opened up the sector to improve the economy.

Legislations

The major legislations and policies concerning the coal industry were:

1. Mines and Minerals (Development and Regulation) Act, 1957
Industry structure and domestic player

The highly regulated Indian coal sector comes under the purview of the Ministry of Coal. The ministry determines policies and charts out strategies for the exploration and development of coal and lignite reserves. The ministry exercises these functions through public sector undertakings (PSUs) like Coal India Ltd (CIL) along with its subsidiaries and Neyveli Lignite Corporation Ltd. Singareni Collieries Company Ltd (SCCL) is a joint venture between the Central government and the Andhra Pradesh government, in which the latter holds a 51 per cent equity stake, while the Central government holds the rest. CIL is one of the largest coal producing companies in the world. In 2008-09, CIL and its subsidiaries accounted for 82 per cent of the total coal production in India. SCCL accounted for 9 per cent of the total production, while captive players accounted for the rest.
The above chart shows the structure of the Indian coal mining industry. The government-owned companies like CIL and SCCL produce more than 90 per cent of the coal produced in the country producers.

Even today, the coal sector — nationalized in 1973 — does not allow private miners to produce coal for commercial purposes. Tata Steel, Steel Authority of India, and Jindal Steel and Power Ltd are some of the major domestic captive players.
(III) Industry Profile: IT Industry

According to International Data Corporation (IDC), the worldwide information technology industry, comprising of hardware, software, IT services and BPOs, clocked aggregate revenues of $1,560 billion in 2008 – a y-o-y growth of 5.6 per cent. The Indian IT industry can be segregated into four main components: software products and engineering services, IT services, ITeS (IT-enabled services) and hardware. Hardware, which accounts for nearly half the share of the domestic market, recorded a 3 per cent growth y-o-y. However, domestic BPO revenues, accounting for just 8 per cent of the domestic market, grew by 24 per cent y-o-y.

The following table summarises the Indian IT-IteS industry’s performance (domestic and exports) between 2003-04 and 2008-09 (estimated).

Table 2.4 — Indian IT Industry Revenue

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</thead>
<tbody>
<tr>
<td>Indian IT industry total</td>
<td>21.7</td>
<td>28.2</td>
<td>37.4</td>
<td>47.9</td>
<td>64.1</td>
<td>71.7</td>
<td>27.0%</td>
</tr>
<tr>
<td>Exports revenue</td>
<td>13.4</td>
<td>18.2</td>
<td>24.2</td>
<td>31.7</td>
<td>40.9</td>
<td>47.3</td>
<td>28.7%</td>
</tr>
<tr>
<td>IT services</td>
<td>7.3</td>
<td>10.0</td>
<td>13.3</td>
<td>17.9</td>
<td>23.1</td>
<td>26.9</td>
<td>29.8%</td>
</tr>
<tr>
<td>ITES-BPO</td>
<td>3.1</td>
<td>4.6</td>
<td>6.3</td>
<td>8.4</td>
<td>10.9</td>
<td>12.8</td>
<td>32.9%</td>
</tr>
<tr>
<td>Software products and engineering services</td>
<td>2.5</td>
<td>3.1</td>
<td>4.0</td>
<td>4.9</td>
<td>6.4</td>
<td>7.3</td>
<td>23.9%</td>
</tr>
<tr>
<td>Hardware</td>
<td>0.5</td>
<td>0.5</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.3</td>
<td>-9.7%</td>
</tr>
<tr>
<td>Domestic revenue</td>
<td>8.3</td>
<td>10.0</td>
<td>13.2</td>
<td>16.2</td>
<td>23.2</td>
<td>24.3</td>
<td>24.0%</td>
</tr>
<tr>
<td>IT services</td>
<td>3.1</td>
<td>3.5</td>
<td>4.5</td>
<td>5.5</td>
<td>7.9</td>
<td>8.3</td>
<td>21.8%</td>
</tr>
<tr>
<td>ITES-BPO</td>
<td>0.3</td>
<td>0.6</td>
<td>0.9</td>
<td>1.1</td>
<td>1.6</td>
<td>1.9</td>
<td>45.3%</td>
</tr>
<tr>
<td>Software products and engineering services</td>
<td>0.5</td>
<td>0.7</td>
<td>1.3</td>
<td>1.6</td>
<td>2.2</td>
<td>2.3</td>
<td>35.2%</td>
</tr>
<tr>
<td>Hardware</td>
<td>4.4</td>
<td>5.2</td>
<td>6.5</td>
<td>8.0</td>
<td>11.5</td>
<td>11.8</td>
<td>21.8%</td>
</tr>
</tbody>
</table>

Note: 1) Exports = Software products (comprising sale of own or resale of software products + packaged software + offshore product development) + engineering services
2) Domestic = Sale of own or resale of software products + packaged software + offshore product development

Source: NASSCOM

Revenues of top 3 players (TCS, Infosys and Wipro) in the Indian software industry grew by 26.8 per cent (y-o-y) in 2008-09 to touch Rs 752 billion, driven increased focus towards high-value service-lines like infrastructure management.
services (IMS) and enterprise application services. The increased thrust on offshore outsourcing has also resulted in more work for outsourcing destinations like India. Since offshoring is now a worldwide phenomenon, several companies witnessed a surge in volumes on account of expansions undertaken by existing clients and new client wins.

Table 2.5: IT Services – Revenues of Large Indian Players

<table>
<thead>
<tr>
<th>Companies</th>
<th>Year ended</th>
<th>2004-05</th>
<th>2005-06</th>
<th>2006-07</th>
<th>2007-08</th>
<th>2008-09</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCS</td>
<td>31-Mar</td>
<td>97.7</td>
<td>132.6</td>
<td>186.9</td>
<td>226.2</td>
<td>278.1</td>
</tr>
<tr>
<td>Infosys</td>
<td>31-Mar</td>
<td>71.3</td>
<td>95.2</td>
<td>138.9</td>
<td>166.9</td>
<td>216.9</td>
</tr>
<tr>
<td>Wipro Ltd</td>
<td>31-Mar</td>
<td>81.6</td>
<td>106.0</td>
<td>150.0</td>
<td>199.8</td>
<td>257.0</td>
</tr>
<tr>
<td>HCL Technologies</td>
<td>30-Jun</td>
<td>33.6</td>
<td>43.9</td>
<td>60.3</td>
<td>76.4</td>
<td>-</td>
</tr>
<tr>
<td>Tech Mahindra</td>
<td>31-Mar</td>
<td>9.5</td>
<td>12.4</td>
<td>29.3</td>
<td>37.7</td>
<td>44.6</td>
</tr>
</tbody>
</table>

Source: Company reports

Employee costs as a proportion of total revenues increases

Employee costs as a proportion of total revenues have been increasing over the years. In 2008, attrition rates in the software industry dropped and ranged between 12-15 per cent, attributable chiefly to the economic slowdown.

Chart 2.2: IT Services — Cost structure and operating margins of large Indian players

Note: List of Companies included in Industry financials: Hexaware Technologies Ltd, Infosys Technologies Ltd, Mindtree Ltd, N I I T Technologies Ltd, Patni Computer Systems Ltd, Polaris Software Lab Ltd, TCS Ltd, Tech Mahindra Ltd and Wipro Ltd

Source: CMIE, CRISIL Research
BFSI, hi-tech/telecom and manufacturing are the key vertical markets that have been driving growth across the hardware, software and IT services segments in the domestic market. Meanwhile, retail, media and healthcare verticals are the emerging areas, which are expected to propel additional growth in the long term. BFSI has remained the largest vertical market with a share of 41 per cent, followed by the IT and telecom segment at 19 per cent and the manufacturing sector at 15 per cent. The IT spending of this sector is likely to increase, as banks continue to set up ATMs and phone and Internet banking related services, and adopt core banking products. Competition is likely to compel PSU banks to update their IT infrastructure to fuel growth. The implementation of Basel II recommendations will also contribute to the rise in IT spending by banks in India.

Domestic hardware market

In 2008-09, hardware constituted about 49 per cent of the domestic market share. Continued pricing pressure coupled with a significant slowdown in volumes due to the tough economic conditions resulted in domestic hardware revenues growing by just 3 per cent (y-o-y) in 2008-09. The significant slump in the growth rate can be attributed mainly to flat PC sales. Nonetheless, we expect the industry to recover over the medium term. Demand is expected to be driven by increasing utility of PCs, availability of affordable finance schemes, and the development of useful content and applications. The push is also expected to come from growing distribution channels of technology vendors.

Domestic IT services market

According to NASSCOM, India’s IT services market has grown from $5.5 billion in 2006-07 to $7.9 billion in 2007-08. In 2008-09, the IT services industry is estimated to be around $8.3 billion (a CAGR of 23 per cent between 2005-06 and
The growth in the IT services market has been driven by continued strength in demand for the system integration and custom application development, besides the increased adoption of managed services and total outsourcing solutions by domestic firms. Services like IT consulting, system integration and custom application development, which form a part of the project oriented work, is estimated to be at $4.7 billion in 2008-09 — a CAGR of 24 per cent from 2005-06 to 2008-09. This accounts for 56 per cent of total IT services.

**Software products and package software**

The trend of increasing IT adoption on the domestic front was also reflected in large and medium enterprises who increased spending on software products, as segment revenues grew from $1.33 billion in 2005-06 to $1.6 billion in 2006-07 at a growth rate of 20 per cent (y-o-y). In this segment, enterprise application products were the key drivers of growth, which accounted for nearly 60 per cent of the total pie.

**Domestic ITeS – BPO**

Over the past few years, ITeS-BPO demand in the domestic market has witnessed a noticeable growth. The segment’s annual revenue is estimated to have grown from $914 million in 2005-06 to $1,941 million in 2008-09 — a CAGR of 28.5 per cent. While the high growth rate can be partly attributed to the small base, the domestic market has also witnessed an increasing adoption of ITeS. Growth in the domestic IT industry has been driven by increased IT adoption in some of the key domestic sectors such as BFSI, telecom, consumer goods and airline/transportation industries. These sectors have been early adopters of ITeS in the domestic market. Currently, they account for nearly three-fourths of the business in this space. Other emerging verticals with a significant potential include
aviation, hospitality and retail. The services required by these segments generally involve customer care, sales and marketing, and transaction processing. Customer contact activities account for over two-thirds of the value of work outsourced, reflecting the nascent stage of the domestic market.

(IV) Industry Profile: Petroleum Industry

Industry structure

The domestic petrochemical industry is oligopolistic in nature, with four to five large producers. However, competition has been increasing gradually, with existing producers expanding capacities (which in turn are increasing the surplus) and thus trying to eat into each other’s markets. Moreover, with the entry of new players like Indian Oil Corporation (IOC), the competition is slated to increase further.

In 2007-08, there were three producers in the polyethylene (PE) market, two in the polypropylene (PP) market, five in the polyvinyl chloride (PVC) market, three in the polystyrene (PS) market and two in the acrylonitrile butadiene styrene (ABS) market. Reliance Industries is the major polymer producer in the country, with a production share of around 66.5 per cent (production share of 37.4 per cent in hdPE (High Density Polythene), 63.6 per cent in lldPE (Linear low-density polyethylene), 86.8 per cent in PP (Polypropylene) and around 56.3 per cent share in PVC (Polyvinyl chloride). Haldia Petrochemicals Ltd has a production share of around 16 per cent (production share of 36.6 per cent in hdPE, 20.2 per cent in lldPE and 13.3 per cent in PP), while GAIL has a production share of around 8 per cent (production share of around 26 per cent in hdPE and 16.3 per cent in lldPE).
Industry characteristics

Global integration: Basic petrochemicals are largely in a liquid or gaseous form, while intermediates and derivatives are largely in a solid or liquid form; hence, the latter can be transported easily over long distances. However, with the increasing use of specialized ships (cryogenic tankers, which can carry liquids at low temperature and high pressure), basic petrochemical products can also be transported easily. Thus, the industry has turned global, which has resulted in competition from around the world. Globalisation in the industry has also been influenced by large capacities. Due to the global integration of the petrochemical industry, regional demand-supply imbalances have an impact on international prices. Hence, international prices are affected when plants shut down, production commences at new capacities and when there is seasonal demand in a region. For instance, in China (a large consumer of petrochemicals), the demand for polymers is low during the Lunar New Year holidays (around February). As a result, international prices tend to drop in February, due to the decrease in demand.

Crude oil linkages: Around 51 per cent of the global cracking capacity is based on naphtha, which is derived from crude oil. Hence, the price and availability of crude oil affects the petrochemical industry. As crude oil prices are highly volatile, the prices of petrochemical products are also very volatile. The volatility is higher in the case of basic petrochemicals and intermediates than in polymer and downstream organic chemicals, as they are closely linked with crude oil and are traded at low levels.

Economies of scale: The investment required per tonne of capacity decreases as capacity increases. In addition, other costs (per tonne of capacity) such as administration, logistics and marketing also decrease with increasing capacity.
Higher capacity also gives the producer more bargaining power in the purchase of feedstock. As a result, larger players in the petrochemical industry are more cost competitive than smaller players.

**Plant operating rates critical to profitability:** The petrochemical industry is capital intensive, resulting in high interest and depreciation costs. Hence, plants need to operate at high rates, in order to reduce the fixed cost per unit of production. Higher operating rates reflect the demand for products and hence, the bargaining power of producers increases over that of the consumer. During price negotiations, besides inventory levels, plant-operating rates also determine the relative bargaining power of the producer and the consumer. In case of petrochemicals, when the demand is adequate, the industry tends to operate at a capacity utilization rate of around 90-95 per cent. In such a situation, the pricing power shifts from the consumer to the producer.

**Feedstock and product prices**
Naphtha prices have become highly volatile over the last few years, owing to increased volatility in the crude oil prices. Naphtha prices (c&f Japan) increased from $274 per tonne in 2000-01 to around $766 per tonne in 2007-08. In early 2008-09, naphtha prices rose to $1,147 per tonne.

**Cyclicality**
The petrochemical industry, like most capital-intensive commodity industries, is cyclical in nature. Demand for petrochemicals is linked to economic growth; hence, when the economy is strong, demand increases. As a result, the profitability of players increases, leading to capacity additions by existing players and the entry of new players.
(V) Industry Profile: Pharmaceutical Industry

The Indian pharmaceutical industry has grown rapidly over the last few decades. Prior to 2005, the Indian regulatory system recognized only process patents, which helped to build the basis of a strong and competitive domestic pharmaceutical industry. The Indian pharmaceutical industry had price control mechanisms that helped to deliver medicines at affordable prices to patients in India.

Key characteristics of the pharmaceutical business

New products drive revenue growth
In general, the revenue growth of a pharmaceutical producer depends on new product introductions, which fulfill unmet therapeutic needs. Hence, a producer's ability to innovate and develop new products is critical to its success.

Patent protection encourages new product development
Given that a drug is the intellectual property of a producer and is usually developed at a significant cost, most countries have a regulatory system of patents that protect the intellectual property rights of the producer and enable the producer to recover the costs of development from the sales of the drug.

Selling effort is directed at doctors
Nearly 80 per cent of the pharmaceutical market comprises drugs that are sold by prescription (ethical drugs). The success of a drug depends on the medical fraternity's perceptions about the superior properties of the drug. Hence, the
selling effort of a pharmaceutical company is focused on providing information about the drug to the medical fraternity.

**Price increases are restricted by the government and institutional buyers**
In most countries, the government funds a portion of a citizen’s healthcare cost. Many governments are trying to control the costs of pharmaceuticals in order to restrict state spending, and increase the reach of the state healthcare programme. In the US, where the government does not regulate prices, the increased presence of large institutional buyers has been restricting the increase in pharmaceutical prices.

**Distribution network for mass-market drugs is crucial in most countries**
Given the mass-market nature of most drugs, it is necessary to have a wide distribution network in order to sustain growth. The size of the network would be determined by the nature of the drugs in a producer’s portfolio. For instance, a mass-market product such as an anti-infective needs to be widely available (in the urban and rural markets), whereas a producer could choose to distribute high-priced drugs only in select urban areas.

**Brand drives market share**
Worldwide, regulators certify manufacturing facilities and drugs in order to ensure the safety and quality of pharmaceuticals. A reputation for quality products and production facilities is a key determinant of the producer's ability to build a market share and access export markets.
Industry overview

The Indian pharmaceutical industry was estimated at US $16.6 billion (including exports) in 2007-08. Domestic formulations contributed only 1 per cent in value terms to global pharmaceuticals due to relatively lower drug penetration and lower prices as compared to developed markets such as US and Europe. India’s healthcare spending is around 6 per cent of the total gross domestic product (GDP) of India.

Out of the total Indian pharmaceutical market in 2007-08, formulations account for around 70 per cent and bulk drugs for the balance 30 per cent in value terms. India produces 22 per cent of the world’s generic drugs (in terms of value) and is also one of the top five API producers (with a share of about 6.5 per cent).

Highly fragmented formulation industry: The formulations industry is highly fragmented both in terms of the number of manufacturers as well as the variety of products. There are about 300-400 units in the organized sector and around 15,000 units in the unorganized (small scale) sector that form the core of the industry. The industry has a wide range of over 100,000 drugs spanning across various therapeutic categories.

Supremacy of the Indian companies vis-à-vis multinational players: Indian companies dominate the formulations market as seven out of the top ten players are Indian. The top five formulations companies, Cipla, Ranbaxy, GlaxoSmithKline, Cadila Healthcare, and Piramal Healthcare, accounted for about 22.3 per cent of the domestic formulations market in 2007-08. The market is concentrated at the top with the top ten players controlling about 36 percent of the total formulation sales.
Concentrated Manufacturing: geographic terms, manufacturing operations are largely concentrated in Maharashtra, Gujarat and Andhra Pradesh. However, many players have shifted their manufacturing bases to excise free zones like Baddi (Himachal Pradesh) and Haridwar (Uttaranchal) due to the shift towards MRP based excise duty levy.

Favorable top line growth: After a strong growth in 2006-07, the growth rate of large sized formulation players slowed down to 11.3 per cent (y-o-y) in 2007-08 due to dismal growth in export revenues of players such as Dr. Reddy’s, Piramal Healthcare and Ranbaxy laboratories. In 2007-08, there was no major US generic launch in contrast to 180 days market exclusivity on products — Simvastatin and Ondansetron — enjoyed by players in 2006-07. Medium sized formulation players continued to grow by more than 20 per cent (y-o-y), mainly due to favorable performance by some of the top players such as Alembic, Elder Pharmaceuticals, Glenmark Pharmaceuticals and Ind-Swift Laboratories. Small sized players also registered a strong growth of 18 per cent.

In the bulk drugs segment, large sized bulk drugs players registered a strong growth of 28.5 per cent (y-o-y) while the small sized bulk drugs players recorded a growth of 12.6 per cent (y-o-y) in 2007-08.

(VI) Industry Profile: Automobile Industry

The size of the Indian automobile industry is expected to grow by 13% by 2016, to reach a mark of US$ 120-159 billion. Presently, India is the 2nd largest two wheeler market in the world and fourth largest commercial vehicle market
worldwide. India is the 11th largest market in the passenger car segment globally which is expected to become the 7th largest market by 2016.

**Domestic Sales**

The cumulative growth of the Passenger Vehicles segment during April 2007 – March 2008 was 12.17 percent. Passenger Cars grew by 11.79 percent, Utility Vehicles by 10.57 percent and Multi Purpose Vehicles by 21.39 percent in this period.

The Commercial Vehicles segment grew marginally at 4.07 percent. While Medium & Heavy Commercial Vehicles declined by 1.66 percent, Light Commercial Vehicles recorded a growth of 12.29 percent.

Three Wheelers sales fell by 9.71 percent with sales of Goods Carriers declining drastically by 20.49 percent and Passenger Carriers declined by 2.13 percent during April- March 2008 compared to the last year.

Two Wheelers registered a negative growth rate of 7.92 percent during this period, with motorcycles and electric two wheelers segments declining by 11.90 percent and 44.93 percent respectively. However, Scooters and Mopeds segment grew by 11.64 percent and 16.63 percent respectively.

**Exports**

Automobile Exports registered a growth of 22.30 percent during the current financial year.

The growth was led by two wheelers segment, which grew at 32.31 percent. Commercial vehicles and Passenger Vehicles exports grew by 19.10 percent and
9.37 percent respectively. Exports of Three Wheelers segment declined by 1.85 percent.

In the two-wheeler segment, the biggest player in India is Hero Honda. A joint venture between the famous Hero group of India and Honda group of Japan, it has the record of producing 1.3 million motorbikes in a single business year in its kitty. Next in line is Bajaj Auto, which is known to be the world's third largest two as well as three wheeler manufacturing company.

In the four-wheeler segment, the most reputed Indian global brand is Maruti Udyog, a joint venture between Suzuki Motors, Japan and the Government of India. It is a listed company and is credited for producing and subsequent selling of more than one million cars in a financial year. It is the largest producer of four wheeler automobiles in the entire south Asia. The second largest four-wheeler manufacturer is the Tata Motor's group, India's biggest automobile company; Tata Motors has an annual turnover of more than Rs. 24,000 Crores. It primarily produces passenger vehicles, multi utility vehicles and sports utility vehicles. It exports its automobiles to countries in the Middle East, Africa and Eastern Europe.

(VII) Industry Profile: Power Industry

Power Industry Structure

Power industry is divided into three segments namely Generation, Distribution and Transmission. Central and State government owned organizations has dominated India's power sector.
1) Generation: Based on the projections of demand made in the 16th Electric Power Survey, additional generation capacity of over 50,000 MW needs to be added to ensure 'Power on Demand by 2012'.

2) Transmission: Transmission of electricity is defined as bulk transfer of power over a long distance at high voltage, generally of 132kV and above. In India, bulk transmission has increased from 3,708ckm in 1950 to more than 265,000ckm today. The entire country has been divided into five regions for transmission systems, namely, Northern Region, North Eastern Region, Eastern Region, Southern Region and Western Region. The Interconnected transmission system within each region is also called the regional grid.

3) Distribution: Apart from an extensive transmission system network which has developed to transmit the power from generating station to the grid substations, a vast network of sub transmission in distribution system has also come up for utilization of the power by the ultimate consumers. However, due to lack of adequate investment on T&D works, the T&D losses have been consistently on higher side, and are presently in the range of 18 percent to 62 percent in various states.

Power Industry Analysis

The Power Supply Industry has been under public ownership and public management ever since India's independence in 1947. When India's constitution came into force in 1950, existing utilities were integrated into 19 SEBs (state electricity boards) under the Electric Supply Act, 1948; these SEBs were and remain part of individual state governments. Individual state governments have the primary responsibility of setting up their own retail electric tariff. Issues regarding
energy, trade and industry are subject to the jurisdiction of both the state and the central governments, thereby opening the door to delays in implementing statutory economic reforms when different points of view arise between the central and state governments.

However with the advent of the ground breaking Electricity Act 2003, open access and privatization has been encouraged and the power industry is expected to undergo some fundamental changes in the upcoming years moving from an unprofitable state controlled industry to a profitable one that has the benefits privatization and increased competition bring about.

The **Ministry of Power (MoP)** is responsible for the oversight of India’s electricity industry and is concerned with perspective planning and policy formulation in the power sector. The MNES (Ministry of Non-conventional Energy Sources) covers the entire renewable energy sector, namely solar, wind, hydro, biomass, geothermal and tidal energy sources.

The **Central Electricity Authority (CEA)** constituted under the Electricity (Supply) Act, 1948, assists the MoP in all technical and economic matters and is responsible for developing a sound, adequate, and uniform policy for the control and utilization of national power resources. It is also responsible for the techno-economic appraisal of the project reports for the proposed power plants, including those in the private sector.

The **State Electricity Board (SEBs)** generates, transmit, and distribute electricity in coordination with private/government owned generating companies or any other relevant agencies. The structure of SEBs is changing as part of the reform programme. The generation, transmission and distribution functions have been
unbundled in a number of states and the entities have been corporatized. Private utilities form the smallest part of the power sector; however, private sector participation is now gaining acceptance.

The Central Sector comprises nine utilities: the National Thermal Power Corporation (NTPC), the National Hydroelectric Power Corporation (NHPC), the North-Eastern Electric Power Corporation (NEEPCO), the Neyveli Lignite Corporation (NLC), the Naphtha Jhakri Power Corporation (NJPC), the Tehri Hydro Development Corporation (THPC), the Damodar Valley Corporation (DVC), the Bhakra-Beas Management Board, and the Nuclear Power Corporation (NPC), which is under the administrative control of the DAE (Department of Atomic Energy) and is responsible for the nuclear power plants.

The Power Grid Corporation of India Ltd is responsible for all the existing and future transmission projects in the central sector and also for the formation of the National Power Grid. The Power Finance Corporation provides term-finance to the projects in the power sector. The rural electrification corporation under the MoP funds programmes of rural electrification.

The Power Trading Corporation was established to serve as a single point of contact for entering into power purchase agreements with independent power procedures on the one hand and the central or state utilities on the other. It also coordinates the off take and sale of power from surplus regions to the deficit ones.

(VIII) Industry Profile: Steel Industry

Steel is the backbone of all industries and is one of the basic ingredients of growth and development of a country. Traditionally, the fortunes of the steel industry
have been linked to the economic cycle of a country. Steel is also the most commonly traded commodity across the globe. The per capita consumption of steel speaks volumes about the relative position of a country on the development front. In 2007, India’s per capita consumption of finished steel was 43 kg as compared to China at 307 kg, Japan at 626 kgs, US at 354 kgs and a world average of 194 kgs. Thus, India’s per capita consumption of steel stood far below that of China and as well as the world average.

**Profitability**

The *Indian steel industry revived in 2002-03, while margins peaked in 2004-05.* The Indian steel industry, which was on the verge of a collapse at the beginning of 2002-03, picked up with a strong performance that led to a sharp increase in the market capitalization of the major steel producers. The profitability of the industry improved significantly on account of higher prices and higher volumes, primarily driven by exports. The yearly average HR prices increased on year-on-year (y-o-y) comparison by 19 per cent to touch Rs. 18,500 per tonne in 2002-03.

Chart 2.3: Aggregate OPM and NPM

![Chart showing OPM and NPM](image)

*Note: Companies covered are SAIL, Tata steel, JSW steel and Ispat industries.*

*Source: Prowess*
After the down-cycle during 1997-98 to 2001-02, the steel industry recovered in 2002-03, ultimately peaking in 2004-05, with operating margins improving to around 36.4 per cent, as compared with 5.5 per cent in 2001-02 (financials of Ispat Industries, JSW Steel, SAIL and Tata Steel have been considered for representing the industry performance).

**The overall profitability of the industry improved on account of:**

- The upward momentum in steel prices
- Firm raw material costs
- Steady exports owing to favourable global demand-supply balance
- Strong domestic growth driven by infrastructure investments and automobile growth
- Capital restructuring, and
- Improvement in the debt-equity ratio.

**Margins fall in 2005-06 due to falling operating rates and prices**

Operating margins fell in 2005-06 to 28.1 percent from a peak of 36.4 percent in 2004-05 owing to a drop in operating rates and falling prices. Despite the strong domestic consumption growth in 2005-06 (12.4 per cent y-o-y), operating rates fell during the year as growth in capacity additions (18 per cent) exceeded growth in domestic consumption (12.4 per cent). Average domestic HR prices fell from Rs. 29,250 per tonne in 2004-05 to Rs. 27,691 per tonne in 2005-06.

**Margins recover in 2006-07 owing to the increase in domestic consumption**

In 2006-07, operating margins revived to 32.5 per cent from 28.1 per cent in 2005-06 and average domestic steel consumption grew by around 18 per cent. However, due to the lack of surplus capacities, domestic production could only increase only...
at an annual average growth rate of around 12 per cent. In 2006-07, operating rates revived to 87 per cent from 85 per cent in the previous year. Additionally, in order to meet the growing domestic consumption, imports grew at robust CAGR of 45 per cent from 2004-05 to 2006-07.

Slight increase in margins in 2007-08 vis-à-vis the same period last year
In 2007-08, operating margins witnessed a slight increase from 32.5 per cent in 2006-07 to 33.3 per cent, whereas net margins remained relatively stable at 17 per cent. Although steel prices increased significantly, rising input costs led to only a slight increase in margins.

Player Profiles

SAIL

Background: Steel Authority of India Ltd (SAIL) is India’s one of the leading producer of steel. It has fully integrated iron and steel plants that produce basic and special steels. The steel produced by SAIL finds application in domestic construction, engineering, power, railway, automotive and defence industries. The government holds an 86 per cent equity stake and voting control in the company. However, SAIL has significant operational and financial autonomy due to its ‘Navratna’ status.

Tata Steel

Background: Tata Steel Ltd (TSL) [erstwhile Tata Iron and Steel Co Ltd (TISCO)] established by Tata Sons, completed 100 years of existence on August 26, 2007. It is the world’s sixth largest integrated producer of steel in India with an annual production of around 27 million tonnes.
Tata Steel is endeavoring to establish strong footholds in global markets. The company has already created manufacturing and marketing capabilities in Europe through the acquisition of Corus, which manufactured over 20 million tonnes of steel in 2008. Corus has operations in the UK, the Netherlands, Germany, France, Norway and Belgium. Earlier the company had acquired Millennium Steel (renamed Tata Steel Thailand) and NatSteel Asia (Singapore), thereby providing the company footholds in South East Asia and the Pacific-rim nations. The manufacturing capacities at Tata Steel Thailand and Natsteel amount to 1.7 million tonnes and 2 million tonnes, respectively. The company, through its joint venture Tata Blue Scope Steel Ltd, is entering into premium quality branded steel products with applications in building and construction. This move is TSL's attempt to move up the value chain.

Essar Steel

**Background:** Essar Steel is promoted by the Ruias, which also has a diversified presence in the power, telecom, oil and gas, and shipping sectors. Essar Steel, owned by the Essar Group, was incorporated in 1976. It is a fully integrated steel manufacturer – from iron ore to ready-to-market products. The company’s products cater to a wide variety of applications such as roofing, automobiles, oil and gas, shipbuilding, fabrication, white goods etc.

JSW Steel Ltd

**Background:** JSW Steel Ltd of the Jindal Group was incorporated in 1994. Jindal Iron & Steel Co Ltd (JISCO) promoted Jindal Vijayanagar Steel Ltd, which was later renamed as JSW Steel Ltd. Today, JSW Steel Ltd has a fully integrated steel plant with its product palette ranging from pellets to colour coated steel.
**Jindal Steel & Power Ltd**

**Background:** Jindal Steel and Power Ltd (JSPL) was formed in 1998, after splitting from Jindal Strips Ltd. JSPL is the market leader in the coal-based sponge iron market. The company has four divisions — sponge iron, power, mild steel and ferro chrome. JSPL is making huge investments in setting up steel plants and power generation plants. The company has made a total investment commitment of over $6.25 billion, which would be the largest private sector investment in Chhatisgarh. The company started its global operations after acquiring the development rights for 20 million tonnes of El Mutun iron ore reserves in Bolivia, South America. The company plans to invest US $2.1 billion over next few years in order to set up an integrated 1.7 million tonnes steel plant, 450 MW power plant, 6 million tonnes sponge iron and 10 million tonnes iron ore pellet plant. This is the largest ever investment in any single project in the country.

JSPL is part of the Indian multinational Jindal Organisation, with Naveen Jindal as its Executive Vice Chairman and Managing Director. The promoters hold a nearly 60 per cent equity stake in the company.

**Bhushan Steel and Strips Ltd**

**Background:** Bhushan Steel and Strips Ltd was promoted by the Bhushan Group after acquiring Jawahar Metal Industries in 1987. The other companies promoted by the group are Bhushan Ltd (narrow-width CR products) and Bhushan Metallics Ltd (precision tubes, ERW pipes and cables).

**Uttam Galva Steel Ltd**

**Background:** Uttam Galva Steel Ltd is promoted by the Miglani family and other family group companies such as Uttam Exports Pvt Ltd and Sanjug Trading Company Ltd.
(IX) Industry Profile: Telecom Industry

Mobile services

Subscriber base

Initial demand for mobile services was low - Mobile telecom services in India began towards the end of 1995. In the initial years, mobile tariffs were high and demand low. In March 1998, there were only 0.88 million mobile subscribers in the country. More than half of these were from Delhi and Mumbai circles. High tariffs were a consequence of the large licence fee commitments and capital expenditure requirements of service providers.

NTP 1999 changed the scenario; growth accelerated from 1999 to 2003 - The National Telecom Policy (NTP), 1999, changed this scenario, with the industry shifting from a fixed licence fee regime to a revenue share regime, thus encouraging more players to enter the market. The mobile services industry started to take off in 1999-00, adding 0.7 million customers to its base. Growth accelerated in 2000-01, as service providers added 1.7 million more customers. In 2001-02, net additions of the industry increased to 2.9 million and further to 6.7 million in 2002-03. In 2002-03, Bharat Sanchar Nigam Limited (BSNL) launched its services as the third operator across many of the circles, followed by fourth operators. This, along with the consequent decline in tariffs drove growth; total number of mobile subscribers rose to 13.8 million in March 2003.

Net additions moved into a new phase in 2003-04 - With over 20 million subscribers joining the rolls, 2003-04 saw growth moving into a new phase altogether. Two key events: implementation of the Calling Party Pays (CPP) regime in May 2003, making incoming calls free and the launch of services by Reliance Infocomm drove this stage of growth. The CPP regime brought more low-usage customers into the mobile telephony fold.
In 2006-07, total telecom subscriber base went up by 66.5 million and reached 206.8 million. In June 2006, the government came out with a policy wherein the fixed wireless subscribers were included in the mobile segment. According to the new policy, only fixed wireline is considered in fixed telephony segment. Therefore, the total wireless segment (mobile plus fixed wireless) went up by 67.2 million subscribers, reaching 166.05 million in March 2007 and again went up by 19.08 million to reach 185.13 million in June 2007.

Table 2.6: All India Mobile Subscriber base

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<tbody>
<tr>
<td>Subscribers</td>
<td>6.7</td>
<td>13.8</td>
<td>35.8</td>
<td>57.0</td>
<td>98.8</td>
<td>156.1</td>
<td>261.1</td>
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<tr>
<td>Net additions</td>
<td>3.1</td>
<td>7.1</td>
<td>21.8</td>
<td>21.4</td>
<td>41.9</td>
<td>67.2</td>
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<td>Growth rate (per cent)</td>
<td>87.4</td>
<td>105.8</td>
<td>157.9</td>
<td>100.1</td>
<td>73.5</td>
<td>68.0</td>
<td>57.2</td>
</tr>
</tbody>
</table>
Source: CRISIL Research, Association of Unified Telecom Service Providers of India (AUSPI) and Cellular Operator Association of India (COAI)

Table 2.7: Total Mobile subscribers in each circle

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<tbody>
<tr>
<td>Metro</td>
<td>2,567,757</td>
<td>4,534,179</td>
<td>10,955,311</td>
<td>15,777,962</td>
<td>23,872,901</td>
<td>31,733,765</td>
<td>44,817,787</td>
</tr>
<tr>
<td>A</td>
<td>2,174,658</td>
<td>4,743,382</td>
<td>12,985,565</td>
<td>20,220,757</td>
<td>33,947,327</td>
<td>58,034,512</td>
<td>93,952,754</td>
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<tr>
<td>B</td>
<td>1,517,620</td>
<td>3,491,876</td>
<td>9,362,414</td>
<td>16,440,452</td>
<td>31,193,489</td>
<td>59,220,692</td>
<td>95,085,463</td>
</tr>
<tr>
<td>C</td>
<td>227,573</td>
<td>508,632</td>
<td>1,317,867</td>
<td>2,905,805</td>
<td>7,447,715</td>
<td>16,162,042</td>
<td>27,223,198</td>
</tr>
<tr>
<td>Total mobile</td>
<td>6,487,808</td>
<td>13,278,069</td>
<td>34,621,157</td>
<td>55,344,976</td>
<td>96,261,432</td>
<td>166,061,011</td>
<td>261,079,212</td>
</tr>
</tbody>
</table>
Note: BSNL, CDMA numbers are not included from 2001-02 to 2005-06 due to non availability of its circle-wise breakup
Source: AUSPI, COAI, CRISIL Research

Industry Structure:

Telecommunication services in the domestic local and long distance, as also international long distance, were initially the monopoly of government-owned organisations. BSNL and Mahaganar Telephone Nigam Ltd (MTNL) provided fixed (basic) services; BSNL also provided domestic long distance service, while
Videsh Sanchar Nigam Limited (VSNL) provided international long distance services. Recognizing the need for development of telecom infrastructure for economic development and the governments financial constraints in meeting the resource needs of the sector, the Central government decided to open the sector to private participation. As a result, in the mobile services segment, private sector participation was allowed from the advent itself, while other services were opened up subsequently.

**Player Profiles:**

**Bharat Sanchar Nigam Ltd**

**Profile:** Bharat Sanchar Nigam Ltd (BSNL) is a public sector undertaking, wholly owned by the government of India. It was formed in October 2000 through the corporatisation of DoT. The company has an authorized share capital of Rs. 175 billion (equity capital of Rs 100 billion and preference capital of Rs. 75 billion). Its paid-up capital is Rs 125 billion (Rs 50 billion equity capital and Rs. 75 billion preference capital). BSNL provides telecom services throughout the country, except Delhi and Mumbai.

**Bharti Airtel Limited**

**Profile:** Bharti Airtel Limited (BAL) is an integrated telecom service provider, providing all types of services namely fixed, mobile, ILD NLD, VSAT, Internet and network solutions. The company was incorporated in July 1995. In April 2006, the company changed its name to Bharti Airtel Limited from Bharti Tele-ventures Limited. The company has broadly divided its business into three segments namely mobile, broadband & telephone (B&T), enterprise services and the recently hived off infrastructure services. Currently, Bharti Telecom Limited
holds 45 per cent in Bharti Airtel, while Singtel Ltd limited is the second largest shareholder in the company with 15.6 per cent.

HFCL Infotel Ltd

Profile: HFCL Infotel Ltd. is the first basic telephony services provider in Punjab; it launched its service in October 2000. HFCL Infotel, a single circle operator, provides wireline, fixed wireless and CDMA mobile services in the Punjab circle. The company has applied for GSM spectrum for offering mobile services in circles other than Punjab. The company was the first operator in the country to launch a CDMA based pre-paid mobile service in 2002. HFCL Infotel also received GSM spectrum in Punjab under the dual technology policy in September 2008.

Vodafone-Essar group

Profile: Vodafone-Essar group, earlier Hutchison-Essar group, provides GSM-based mobile services in 16 circles of the country. The company went through major transformation phase, where the Vodafone limited, a leading UK-based telecommunications services provider, acquired a controlling stake of 67 per cent in Hutchison-Essar group for an enterprise value of $18.8 in February 2007. The other partner, Essar Ltd, holds the remaining stake. In July 2007, the company officially changed its name from Hutchison-Essar to Vodafone-Essar.

Idea Cellular Ltd

Profile: Idea Cellular's antecedents date back to 1995, when the Aditya Birla Group and AT&T (through Birla AT&T - Maharashtra, Gujarat) and the Tata Group (through Tata Cellular- Andhra Pradesh) came together to set up cellular
networks. The company then called Birla AT&T Communications Ltd, started offering cellular services in the Gujarat circle in January 1997 and in the Maharashtra circle in March 1997. In 2000, the company decided to merge with Tata Cellular and subsequently acquired RPG Cellcom, the cellular operator in Madhya Pradesh. The merged entity of Birla AT&T and Tata Cellular was renamed Birla Tata AT&T Communication Ltd in May 2001. In May 2002, the name of the company was again changed to Idea Cellular Ltd.

Mahanagar Telephone Nigam Ltd

Profile: Mahanagar Telephone Nigam Ltd (MTNL) was set up by the government in 1986 to provide telecom services in Delhi and Mumbai. Telecom services in these two cities, the highest revenue-generating service areas in the country, were previously under the purview of the Department of Telecommunications. The government holds a 56.2 per cent stake in the company. MTNL provides basic telephone services, post paid GSM cellular services under the Dolphin brand, pre paid GSM cellular services under the Trump brand, CDMA mobile services under the Garuda brand and Internet services in Delhi and Mumbai.

Spice Communications Ltd

Profile: Spice Communications, promoted by the Modi Group, provides GSM mobile services in the Karnataka and Punjab circles. In September 2005, Hong Kong based Distacom Ltd sold its 42 per cent stake in Spice Telecom Ltd to the BK Modi-controlled McorpGlobal. The deal was carried out in association with Ashmore Investment Ltd, a financial associate of Deutsche Bank. After this deal, Modi group's stake in Spice increased from 22 per cent to 36 per cent. Ashmore
Investment held 49 per cent and Darby group held rest 15 per cent. The company came out with an IPO in June 2007.

Tata Teleservices Ltd. (TTSL)

Profile: TTSL provides a whole bouquet of services under the Tata Indicom brand. Its services include basic telephone services, Internet services (broadband as well as dial-up) and NLD services. Its telephone services include common wireline telephones, fixed wireless telephones and CDMA mobile services. Last year, in March 2006, TTSL sold 17 per cent of its stake of which 9.9 was acquired by Temasek Holdings and remaining 7.1 per cent by Chennai-based entrepreneur C Sivasankaran.

Aircel

Profile
The Aircel Group, providing GSM based mobile services, is a joint venture between Maxis Communications Berhad of Malaysia and Apollo Hospital Enterprise Ltd of India, with Maxis Communications holding a majority stake of 74 per cent.

(X) Industry Profile: Entertainment and Media Industry

The Indian media and entertainment (M&E) industry is one of the fastest growing industries in the country. Its various segments—film, television, advertising, print and digital among others—have witnessed tremendous growth in the last few years.

According to a 2009 report jointly published by the Federation of Indian Chambers of Commerce and Industry (FICCI) and KPMG, the media and
entertainment industry in India is likely to grow at a compound annual growth rate (CAGR) of 12.5 per cent per annum over the period between 2009-13 and touch US$ 20.09 billion by 2013.

With a majority of the population below the age of 35, and increasing disposable income in Indian households, the average spend on media and entertainment is likely to grow in India, according to the 2009 edition of PricewaterhouseCoopers’ Indian Entertainment and Media (E&M) Outlook, covering the forecast period of 2009–2013.

**Television**

According to the study by FICCI and KPMG, the television industry, which is currently valued at about US$ 4.63 billion, will expand by 14.5 per cent between 2009 and 2013. According to the above PwC report, the television advertising industry is expected to account for a share of 41.0 per cent of the advertising industry in 2013, up from the present share of 39.0 per cent.

Digital distribution platforms such as direct-to-home (DTH) and Mobile TV are transforming the industry. Mobile TV—where content will stream in on mobile phones—is poised to grow big with the advent of 3G, according to experts. With the DTH industry estimated to grow by almost 100 per cent in the 2009-10 fiscal—from US$ 310.16 million in 2008-09 to an expected US$ 620.25 million in 2009-10—leading DTH firms such as Sun Direct, Bharti Airtel DTH and Big TV have increased their marketing budget by 20-25 per cent in the fiscal year 2010.

The television distribution industry is expected to reach US$ 5.2 billion in 2013 from the estimated size of US$ 3.12 billion in 2008, which translates into a growth of 12.2 per cent on a cumulative basis over the period, according to the 2009
edition of PricewaterhouseCoopers' Indian Entertainment and Media (E&M) Outlook.

Capitalizing on the success of the 3D film Avatar, television manufacturers are gearing up to introduce new 3D TV sets into the market in the second quarter of 2010. Another player to get on the 3D bandwagon, the Indian Premier League, is set to become the first sports body to telecast a match live in 3D.

**Music**

Industry experts estimate that the current size of the music industry is about US$ 149 million. According to a PwC study, the industry is likely to grow to become a US$ 164.56 million industry by 2012.

With music channels giving less space to music programming to accommodate game shows and reality shows, independent music bands such Workshop Them Clones are increasingly looking to promote their videos by making them available online.

Digital music sales are expected to account for 88 per cent of the total music industry revenue in India by 2009. Though for a long time, cassettes and compact discs (CDs) have accounted for most music sales, future growth is expected to come from non-physical formats such as digital downloads and ringtones, among others.

According to the 2009 PwC study, the important driver for the music industry over the coming years, will be digital music, and its share is expected to move from 16 per cent in 2008 to 60 per cent in 2013. Also, within digital music, mobile music is expected to continue to increase its share and maintain dominance.
Radio

The cheapest and oldest form of entertainment, reaching 99 per cent of the population, this segment is likely to see many dynamic changes.

According to the 2009 PwC study, the radio industry is forecast to grow at a compound annual growth rate (CAGR) of 18 per cent over 2009-13, reaching US$ 391.15 million in 2013 from the present US$ 170.87 million in 2008. That's more than double its present size. In terms of its share of the advertising pie, it is projected that the radio advertising industry will be able to increase its share from 3.8 per cent to 5.2 per cent between 2009 and 2013.

Advertising

The number of brands advertised on television witnessed an 82 per cent increase during 2008 compared to 1999, according to a survey by AdEx India, a division of Tam Media Research.

The television advertising industry is expected to reach US$ 3.12 billion in 2013 from the estimated size of US$ 1.75 billion in 2008, which translates into a growth of 12.2 per cent on a cumulative basis, over the period.

Going forward, digital media advertising (internet, mobile and digital signage) is expected to emerge as the medium of choice for advertisers. According to a FICCI-PwC report, online advertising is expected to touch US$ 212.03 million in 2011.

Digital advertising on newspaper web sites will increase at a 6.8 percent compound annual rate to US$ 8.3 billion in 2013 from US$ 6 billion in 2008, increasing its share of total newspaper advertising to 9.1 per cent from 5.4 per cent in 2008, as per the 2009 PwC report on the Indian media and entertainment industry.
According to a PwC report, Internet advertising is projected to expand by 32 per cent over the next five years to reach US$ 411.74 million in 2013 from US$ 102.94 million in 2008. Also, the share of online advertising is projected to grow from 2.3 per cent in 2008 to 5.5 per cent in 2013. The report estimates the size of the Out of home (OOH) advertising spend to be US$ 308.8 million in 2008. This figure is projected to almost double in 2013 to US$ 514.67 million.

Cinema

The Indian film industry is the largest in the world in terms of number of films produced per year. The FICCI-KPMG study values the Indian film industry at US$ 2.11 billion and projects its growth at 9.1 per cent till 2013.

The opening of the film industry to foreign investment coupled with the granting of industry status to this segment has had a favourable impact, leading to many global production units entering the country.

Meanwhile, non-resident Indian (NRI) filmmakers are looking to India as the country offers a large market and a mainstream arts platform. Filmmaker Sangeeta Datta who is based in London says that the framework of reference has changed for NRI cinema and that NRI filmmakers like herself are now more geared towards ethnic communities and the diaspora which assures them of an audience in India, UK and the US.

Print/Publishing

According to a PwC report, the print industry is projected to grow by 5.6 per cent over the period 2009-13, touching US$ 4.26 billion in 2013 from the present US$ 3.24 billion in 2008. The relative shares of newspaper publishing and magazine publishing are not expected to change significantly and are expected to remain the
same at around 87 per cent in favour of newspaper publishing. Magazine publishing is expected to grow at a higher rate of 6.5 per cent as compared with newspaper publishing which is expected to grow at 5.6 per cent over the five year period between.

The government has indicated that it may soon amend the Press and Registration of Books Act, 1867, so that it keeps pace with the growth of the print media in the country over the years.

Newspaper sales in India, China and Japan which stand at 60 per cent in terms of circulation, are the highest in the world, it has been announced by Timothy Balding, co-chief executive officer of the World Association of Newspapers and News Publishers (WAN-IFRA) at the 62nd World Newspaper Congress in Hyderabad.

A survey carried out by research firm Valuenotes Database, spanning 237 consultants, publishers and service providers reveals that India continues to be a favoured destination for publishing outsourcing.

**Theatre**

A project billed as India's answer to Broadway has been inaugurated in Gurgaon. The project called the Kingdom of Dreams, has been conceptualized by the Great Indian Nautanki Company, a joint venture between the Apra Group of Companies and Wizcraft International Entertainment and plans to generate an interest in the genre of musical theatre.

**Digital media**

According to a FICCI-KPMG study, the Indian animation industry will grow from the current US$ 362 million to US$ 811.2 million by calendar 2013.
Further, with the country turning out to be a hub for graphic industries like animation and design, companies such as Intel and Advanced Micro Devices (AMD) are reworking their India strategies to grow their businesses in the computing segment. The move has been triggered by the emergence of high-end games involving real-time 3D rendering.

Tata Teleservices (TTSL) has become the first service provider to offer mobile TV on high speed broadband wireless by launching Photon TV, which allows users to access channels on desktops and laptops.

English news channel, NewsX, has launched a service which will enable mobile phone users to receive live videos on their handset, through a specific mobile URL.

A considerable number of Indian special effects artists and animators are moving up the ranks of established US animation studios such as Walt Disney and DreamWorks Animation SKG and are also creating a niche for themselves in the special effects market as well.

In a move that will strengthen its international presence and expand its offerings to include services such as restoration, 2D-to-3D conversion and post-production services to broadcasters and studios, Reliance MediaWorks (RMW) has acquired the assets of ilab UK Ltd, a film processing facility located in Soho, London.

**Government Initiatives**

The Government has initiated major reform measures:

- Permitting 100 per cent foreign direct investment (FDI) through the automatic route for the film industry and advertising
- Allowing 49 per cent foreign holding in cable TV and direct to home DTH
• Allowing 100 per cent FDI in non-news publications and 26 per cent FDI in news publications
• The government has allowed 100 per cent FDI in fax editions of magazines and newspapers
• Recently, the government allowed companies with core business in news segment but hived off non-news business, to raise funds from overseas beyond the stipulated FDI limit of 26 per cent. Such companies can raise and route funds from overseas through its non-news arm, which will not be calculated as foreign investment
• The FM radio sector was opened to FDI with a 20 per cent cap
• Permitting the setting up of uplinking hubs for satellite uplinking by private TV broadcasters from Indian soil
• Giving industry status to the films segment
• Opening FM radio operations to the private sector
• The government has allotted US$ 50.13 million in the current Five-Year-Plan for various development projects for the film industry. The funds will be utilised to set up a centre for excellence in animation, gaming and visual effects
• The government has approved the policy for headend-in-the-sky (HITS) operators, a technology that will provide digitised cable content to viewers across the country.

**Going Global**

With the growing popularity of Indian content in the world market in general and South Asia in particular, the Indian entertainment industry players are venturing abroad to tap this booming segment.
In fact, according to a report by CII-AT Kearney, the share of international markets in total box office collections is estimated to increase from 8 per cent in 2006 to 15 per cent in 2010. Consequently, many domestic players like Yash Raj Films, Reliance-Adlabs and UTV, among others, have set up distribution arms overseas. Also, content for areas such as music and television have a huge potential international market.