CHAPTER I
INTRODUCTION & RESEARCH METHODOLOGY

1.1 DEVELOPMENT IN PHARMACEUTICAL INDUSTRY: A GLOBAL PERSPECTIVE

Pharmaceutical is a unique industry as it saves millions of lives and helps to those who are suffering from disease to recover and lead more productive ones. Pharmaceutical is one of the most innovative sectors in the World, which, over the past century, has played a unique role in developing new and improved medicines and vaccines to prevent and treat diseases. The structure of the pharmaceutical industry of a country reflects its socio-demographic-economic characteristic. The size and density of pharmaceutical sector are determined by the demand related phenomenon such as population density, level of education, access to medical services, and personal consumption expenditure on health care. The structure also varies with development of the country and speed of adaptation of new medical assistance schemes i.e health insurance, on purchase price parity basis, changing disease profile, and Government policies.

PWC-CII report (2012) reported that the worldwide sales of medicines reached 1.08 trillion USD in 2011 (an increase of 7.8% of the worldwide over the previous year) and are expected to reach 1.5 trillion USD by 2020. The United States, United Kingdom and European pharmaceutical companies are the major ones of the industry. United States is still the largest pharmaceuticals market in the world with a market size of around $300 billion and it is expected to reach $425 Billion by 2015. As the pharmaceutical industry in regions like Latin America, Europe and Japan is growing at a steady rate but at lower rate than developing regions like China and India.

As the economy diversifies and per capita income increases, the emerging markets (China, India, Brazil, Russia, Turkey, Mexico and South Korea) will contribute to over 40% of the incremental growth of the global Pharmaceutical industry over the next
decade (IMS Health Report 2010).

**IMS Health Report (2010)** Pharmerging countries are recording corresponding growth in double figures. The seventeen pharmerging markets represent the fastest-growing segment of the global pharma industry. As per industry estimates, the total expenditure on healthcare in these markets is likely to grow from $205 billion to $499 billion by 2020 and these countries will have the highest growth in Global pharmaceutical industry. This is being depicted from the Graph 1.1:

**Graph 1.1: Global Pharmaceuticals market sales in 2011 and projected Sales in 2020**

IMS Health  Report (2013) reported the dramatic shift faced by the leading economies of the United States, Europe and Japan are significantly different from those in the emerging markets. The key dynamics that continue to contribute to lower sales growth in mature pharmaceutical markets, including high rates of patent expiration, increased market penetration of generics, under-funding of the biotech industry, changes in reimbursement, tighter government restrictions around product safety and spending, as well as macroeconomic conditions.
In reviewing each of the world’s emerging economies, IMS Health applied its proprietary market assessment and forecasting capabilities to identify three levels of pharmerging markets. The number of countries rated as pharmerging has expanded from the seven identified in 2006 – China, Brazil, Mexico, India, Russia, South Korea and Turkey – to 21 markets in 2013. IMS Health also has re-classified South Korea as a “developed” market based on its current GDP level. Pharmerging countries are further classified as following:

- **Tier 1: China.** China is expected to double on branding medicines by 2015, and to grow nearly six fold between 2010 and 2015 for generics (Bioassociate Consulting & Management Ltd. 2012).

It is depicted in Figure 1.1 that China will significantly supersede other pharmerging countries. By 2020, China’s total spend on healthcare is expected to reach US$ 1 trillion, up from US$ 357 billion in 2011, and from just US$ 156 billion in 2006 (IMS Health Report 2013). Most of the growth in China will continue to come from branded generic products manufactured and marketed by established domestic companies, although demand for innovative products from multinational companies is rising in the country’s leading urban centers.

**Figure 1.1: The projected growth of Tier 1, 2 and 3 Pharmerging Countries**

![Diagram of projected growth of Tier 1, 2, and 3 Pharmerging Countries](source: IMS, 2012)
- **Tier 2: Brazil, Russia and India.** These countries are each expected to add US $5-15 billion in annual pharmaceutical sales by 2017 (IMS Health Report 2013). Brazil and Russia both have achieved consistent double-digit pharmaceutical sales growth in recent years, while India has benefited from a rising middle-class population, improvements in medical infrastructure and the establishment of intellectual property rights.

- **Tier 3: “Fast Followers.”** An additional 17 countries are now expected to contribute $1-5 billion each in annual sales growth by 2013 (IMS Health Report 2013). They are: Algeria, Colombia, Nigeria, Saudi Arabia, Venezuela, Poland, Argentina, Turkey, Mexico, Vietnam, South Africa, Thailand, Indonesia, Romania, Egypt, Pakistan and the Ukraine. While each market is unique, they are all complex, dynamic and subject to rapid change.

It is depicted in Graph 1.2 extracted from IMS Health Market Prognosis, 2011, Pharmaceutical growth is expected at 1-5 % CAGR to 2015 for mature markets, 19-22% CAGR for Tier 1 pharmerging, 14-17% CAGR for Tier 2 pharmerging, and 10-13% CAGR for Tier 3 pharmerging countries with value worth more over US$1 trillion to 2015 (IMS Health Report 2013). Pharmerging countries are expected to experience double-digit growth.

**Graph 1.2: Global Sales and Growth**

1.1.1 Major Players of the World Pharmaceutical Industry

The 10 largest drugs companies control over one-third of this market, several with sales of more than US$10 billion a year and profit margins of about 30%. Six are based in the United States and four in Europe. It is predicted that North and South America, Europe and Japan will continue to account for a full 85% of the global pharmaceuticals market well into the 21st century. Companies currently spend one-third of all sales revenue on marketing their products - roughly twice what they spend on research and development (World Health Organisation 2014).

Table 1.1: Top 20 Global Pharmaceutical Corporations

<table>
<thead>
<tr>
<th>Rank</th>
<th>2013 Rank</th>
<th>2013 Sales (US$ Mn)</th>
<th>2013 Growth (LC$ %)</th>
<th>2012 Sales (US$ Mn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>874.611</td>
<td>4.5</td>
<td>857.710</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>59.576</td>
<td>1.2</td>
<td>50.521</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>50.330</td>
<td>2.6</td>
<td>46.707</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>38.357</td>
<td>7.4</td>
<td>39.891</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>25.150</td>
<td>3.2</td>
<td>34.958</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>32.344</td>
<td>5.3</td>
<td>32.736</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>30.784</td>
<td>12.2</td>
<td>27.717</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>30.257</td>
<td>2.9</td>
<td>31.704</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>24.258</td>
<td>-1.2</td>
<td>24.762</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>23.045</td>
<td>8.6</td>
<td>21.583</td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>18.621</td>
<td>8.7</td>
<td>17.103</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
<td>18.150</td>
<td>2.0</td>
<td>17.881</td>
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<td>13</td>
<td>13</td>
<td>17.375</td>
<td>5.7</td>
<td>16.809</td>
</tr>
<tr>
<td>14</td>
<td>14</td>
<td>17.276</td>
<td>6.3</td>
<td>16.431</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td>14.300</td>
<td>15.0</td>
<td>12.576</td>
</tr>
<tr>
<td>16</td>
<td>16</td>
<td>13.399</td>
<td>-9.5</td>
<td>15.909</td>
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<tr>
<td>17</td>
<td>17</td>
<td>12.742</td>
<td>2.6</td>
<td>12.375</td>
</tr>
<tr>
<td>18</td>
<td>18</td>
<td>11.687</td>
<td>7.4</td>
<td>10.325</td>
</tr>
<tr>
<td>19</td>
<td>19</td>
<td>11.023</td>
<td>-12.9</td>
<td>12.756</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
<td>11.011</td>
<td>14.8</td>
<td>9.540</td>
</tr>
</tbody>
</table>

Source: IMS Health MIDAS, December 2013
US$: Sales and Rank are in US$ with quarterly exchange rates
LC$: Growth is in constant $ to normalize for exchange rate fluctuations
Growth rates in US$ are not recommended due to fluctuations in the value of the dollar
Sales cover direct and indirect pharmaceutical channel wholesaler and manufacturers
The figures above include prescription and certain over the counter data and represent manufacturer prices.
The pharmaceutical industry is characterized by a high level of concentration with twenty multinational companies dominating the industry. Table 1.1 contains information about these major pharmaceutical companies that are sorted in the order of their 2013 revenues from the sales of pharmaceutical products. Numbers provided in this table include sales of all subsidiaries and affiliated companies that are consolidated in annual reports of the corresponding companies. In order to facilitate a comparison of different companies revenues of all of them are shown in US dollars.

Davidson, L., Greblov, G. (2005), “The majority of the largest pharmaceutical companies (Table 1.1) are not diversified. They are either concentrated exclusively on pharmaceutical products (Eli Lilly and AstraZeneca are good examples with virtually 100% of their revenues coming from sales of pharmaceutical products) or, although they develop and manufacture other health care products, they still have pharmaceutical divisions as the core of their business that provide more than 50% of their revenues. Other products manufactured by these companies usually include medical devices, nutritional products, consumer healthcare products and products for animal health.”

1.2 HISTORY AND EVOLUTION OF PHARMACEUTICAL SYSTEM IN INDIA

Indian medical system can be traced way back to 2000 B.C. with Rig-Veda. Rig-Veda is compound work in Sanskrit language and it means combination of science of life and art of living. This system revolves around a philosophy of ‘Dosha’, as vata, pitta, and kapha i.e. wind, bile, and phlegm respectively as a metabolic terms and under mughal emperors urab medicines entered into India under the name of ‘Unani’, Unani medicine are still popular in some distinct places in India.

1.2.1: Historical perspectives of Indian Pharmaceutical Industry

The foundation of Indian Pharmaceutical Industry was laid in the year 1901 with the opening of Bengal Chemical and Pharmaceutical works in Calcutta by Prof. P.C.Roy. In pre-independence era British government had also setup several research institute in
Pharmaceutical as Preventive Medicine, Madras (Year 1904), Central Drug Research Institute, Kasauli (Year 1905), and Pauter Institute, Cannaore (Year 1907). After the Second World War and post independence, India got significance progress in industrialization and self-reliance. Government of India had invested venture capital in Hindustan Antibiotic Ltd, a first public sector firm in the year 1954 with state of art manufacturing facility of Sulfa drug from indigenous raw materials and also government had undertaken second project as Indian Drugs and Pharmaceutical Ltd in the year 1961.

1.2.2 Stages of Evolution of Indian Pharmaceutical Market

Ganjre, K.A. (2011) stated that Indian Pharmaceutical Industry is one of the fastest growing industries since independence comprised of state owned enterprise, locally owned firms and affiliation of major M.N.C’s drug companies combines to provide better healthcare for our society. Due to technological advancement and increase in domestic as well as exports, this industry has substantially grown over few decades and comes in national flow to provide better opportunities for our investors, researchers, and technicians. Creating a high scientific knowledge based identity; pharmaceutical industry has got a new shape to thrive in Product Patent Act era i.e. January 01, 2005 onwards with an emphasis on research and development.

Figure 1.2 depicts about the stages of evolution of Indian pharmaceutical industry. The stage I involves monopolistic phase, when few companies were present in the market that had in early age of 1970’s and their brands enjoyed monopoly in their segments. Multi- brand phase (Stage II) shifted the approach of pharmaceutical companies for diversification of product range and enter into new markets areas. After that emerging market phase (Stage III) has come into focus where innovation and continuous improvement in product strategies is a key for successful marketers and today commoditization (Stage IV) is emerging to give a new shape for pharmaceutical marketing.
A concise diagrammatic presentation of the evolution of Indian pharmaceutical sector is shown in Figure 1.3.

**Figure 1.3: Evolution of Indian Pharmaceutical Sector**

Source: Anarica Research

Note: KAM - Key Account Management, CSO - Conflict Sales Organisation
Pharmaceutical industry consists of two major segments: Bulk Drugs and Formulations. A bulk drug is an active substance having scientific and medical properties as a result of extensive research, and dominates low margin market segment. As India possessed Process Prior to Patent Act, 2005, marketing of these Bulk Drug segments is restricted up to contract, tender, or on short supply basis. Pharmaceutical industry comprises of four major branches as Ethical or Prescription bases, Generic, Over the Counter (OTC) and Surgical and Medical Instruments. The most important of these for our study from marketing angle is Ethical and Generic branch, because of its high contribution and uniqueness in marketing. Further, Pharmaceutical industry consists of three branches as Allopathic, Homeopathy and Ayurveda. Besides this some indigenous systems like Unani, Acupressure etc. are also popular in some areas with their own limitations. Allopathic drugs have a high volumetric base representing more than 80 percent of pharmaceutical market.

1.3 DEVELOPMENT IN PHARMACEUTICAL INDUSTRY: AN INDIAN PERSPECTIVE

The Indian pharmaceutical industry currently tops the Graph amongst India's science-based industries with wide ranging capabilities in the complex field of drug manufacture and technology. AIOCD AWACS Market Intelligence Report (2013), the Indian pharmaceutical industry, a highly organized sector, is estimated to be is valued at 72069 crore INR in 2013 as against 65654 crore INR in 2012. The total pharmaceutical market in India is growing at an average rate of 9 percent over the year. It ranks very high amongst all the third world countries, in terms of technology, quality and the vast range of medicines that are manufactured. It ranges from simple headache pills to sophisticated antibiotics and complex cardiac compounds; almost every type of medicine is now made in the Indian pharmaceutical industry.

Although India accounts for 17 percent global population (Burke 2011), the sales of pharmaceutical market are just 1.4 percent of the global sales in terms of value and 10
percent in terms of volume (India Brand Equity Foundation Report, 2013). It is expected that with the current growth, India will occupy 10th position by its record sales and with the absolute growth of 14 percent, overtaking Brazil, Mexico, South Korea and Turkey (AIOCD AWACS Market Intelligence Report 2013). India is expected to add US$ 13-14 billion in 2015 (McKinsey & Company Report). This is being depicted in Figure 1.4. Six trends will influence the growth of the Indian pharmaceuticals market over the next decade: doubling of disposable income and the number of middle-class households, expansion of medical infrastructure, greater penetration of health insurance, rising prevalence of chronic diseases, adoption of product patents, and aggressive market penetration driven by the relatively small companies. On the basis of these trends researchers believe that India, from a market size of US$ 6.3 billion in 2005, the pharmaceutical market will grow to about US$20 billion by 2015.

Figure 1.4: India is projected to be the 10th Largest Market by 2015
According to Department of Pharmaceuticals (2009), India’s pharmaceuticals industry looks set for a solid long-term growth. It already ranks fourteenth in the global league table, with sales of almost US$19 billion in March 2009 and various studies estimates that it will raise to approximately US$50 billion by 2020 – a 163% in the space of eleven years. It is also estimated that it will rise to approximately US$50 billion by 2020 - a 163% in the space of eleven years (PricewaterHouse Cooper report 2010). This growth will be driven by the expanding economy and increasing per capita GDP.

National Council of applied economic research (2008), India’s middle class constituted 13% of the population. While this remains a fairly small proportion of the total population, it represents a substantial increase from a mere 3% in 1995 (NCAER report, 2006). If the economy continues to grow faster than those of the developed world and if the literacy rate keeps rising, around a third of the population (34%) is expected to join the middle class in the near future, so it is estimated that they are rapidly acquiring the buying power, necessary to afford modern healthcare, particularly if purchasing power parity is considered. One source estimates that at least 60 million Indians – a market as big as the UK – can already afford to buy Western medicines (Perlitz, U 2008). Aggressive pricing strategies will be necessary, however, to make inroads into India’s price sensitive market.

The "organized" sector of India's pharmaceutical industry consists of 250 to 300 companies, with the top 10 firms representing 37 percent of total Indian Pharmaceutical Market. However, the total sector is estimated at nearly 20,000 businesses, some of which are extremely small. It has expanded drastically in the last two decades. Around 90 percent of India's demand for bulk drugs, drug intermediates, pharmaceutical formulations, chemicals, tablets, capsules, orals and injectibles is met by local manufacturing. The Indian pharmaceutical market has achieved a tremendous growth and has showed further potential in terms of infrastructure, development and technology.
1.4 TRENDS IN INDIAN PHARMACEUTICAL INDUSTRY

1.4.1 Indian Pharmaceutical Sector Revenue Trending Growth

India Brand Equity Foundation Report (2013) The Indian pharmaceuticals industry revenues are expected to rise at a CAGR of 17.8 per cent to USD 36 billion during 2008–16. During the same period, the revenues from prescription drugs are expected to expand at a CAGR of 18.2 per cent to USD 29 billion. This is being depicted in Graph 1.3.

Graph 1.3: Revenue of Indian Pharma Industry

1.4.2 Industry Performance

AIOCD AWACS Market Intelligence Report (2013), The top 10 companies contributed to 41 percent of total IPM sales up in 2013 from 39 percent in 2010. These companies had a collective growth of 9 percent (lower than the IPM). Companies that ranked from 11 to 20 contributed to 22 percent of IPM sales and had a cumulative growth of 12 percent (higher than the IPM). The remaining companies contributed to 37 percent of the IPM sales with a growth rate of 9 percent. The Contribution and growth of the companies in (Indian Pharmaceutical Industry) IPI are depicted in Table 1.2.
Table 1.2: Contribution and Growth of Indian Pharmaceutical Industry

<table>
<thead>
<tr>
<th>Company’s Ranking</th>
<th>Contribution</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 10</td>
<td>41%</td>
<td>9%</td>
</tr>
<tr>
<td>Next 10 (Rank 11-20)</td>
<td>22%</td>
<td>12%</td>
</tr>
<tr>
<td>Others</td>
<td>37%</td>
<td>9%</td>
</tr>
</tbody>
</table>

India Brand Equity Foundation Report (2013), Top four companies account for 20 percent market share. Cipla has the largest share (5.0 per cent) in the Indian pharma market, with Moving Annual Total (MAT) sales of US$ 649.6 million during March 2013. Sun Pharma posted the highest growth in revenue (20 per cent) among major players and during the same period GlaxoSmitKline with a revenue base of USD 596.2 million for March 2013 MAT sales, ranks third in the market. Ranbaxy, with a revenue base of USD 542.2 million for March 2013 MAT sales, ranks fourth in the market. While these top four companies have garnered 20 per cent market share, top 10 companies account for nearly 39 per cent of the market share. This is being depicted in Graph 1.4.

Graph 1.4: Market Share, Revenue and growth rates of leading companies
1.4.3 Key Therapy Areas

(McKinsey & Company Report) had projected that specialty and super-specialty therapies will grow faster than the market, even though mass therapies will continue to be the largest segment. As the Specialty therapy comprises a small market but it is projected that super-specialty therapies will maintain the current growth momentum, and become a market of more than USD 5 billion by 2020. The past few years have affirmed this trend. Super-specialty therapies comprise of therapeutic areas such as oncology, urology, and nephrology that are considerably niche and derive less than 20 per cent of their prescriptions from generalists. Mass therapies have evolved to comprise two differing opportunity areas. The first, which makes up the majority of the opportunity, is acute indications within therapeutic areas such as respiratory and gastro-intestinal that have been traditionally treated by general practitioners (GPs) and consulting physicians (CPs). The second segment comprises older therapies in chronic indications such as diabetes, hypertension and epilepsy.

AIOCD AWACS Market Intelligence Report (2013), the top 10 therapy areas (Mass Therapy) of the IPM contribute to approximately 90 percent of the IPM sales. Chronic therapies (cardio, gastro, CNS and anti-diabetic) have been outperforming the market for the past four years and have grown at a rate of 14 percent, faster than acute therapies (anti-infectives, respiratory, pain and gynaec) which grew at 9.6 percent. This is what effectively resulted in an overall slowdown in 2013. The contribution of chronic therapies to the IPM has gone up from 27 percent in 2010 to 30 percent in 2013. The contribution and growth of two therapeutic categories is depicted in Table 1.3. This trend shows that there will be growth in Chronic Therapy category in coming years.

Table 1.3: Contribution and growth in therapeutic categories

<table>
<thead>
<tr>
<th>Therapy</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>Growth %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute</td>
<td>73%</td>
<td>70%</td>
<td>9.6%</td>
</tr>
<tr>
<td>Chronic</td>
<td>27%</td>
<td>30%</td>
<td>14%</td>
</tr>
</tbody>
</table>
1.4.4 Growth Trends in Indian Companies and MNCs

There has been a slowdown in the growth of the top Indian as well as multinational companies. However, the slowdown is more prominent in the MNCs than in the Indian companies. In 2012, the top five MNCs had a growth rate of 16 percent which dropped down to 7 percent in 2013. Similarly, in 2012, the top five Indian companies had a growth rate of 16 percent that dropped down to 12 percent in 2013 (AIOCD AWACS Market Intelligence Report 2013). This growth trend is depicted by Table 1.4.

<table>
<thead>
<tr>
<th></th>
<th>Growth 2012</th>
<th>Growth 2013</th>
<th>Inc Value 2012</th>
<th>Inc Value 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MNC</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top 5</td>
<td>16%</td>
<td>7%</td>
<td>1649</td>
<td>880</td>
</tr>
<tr>
<td>Top 10</td>
<td>16%</td>
<td>8%</td>
<td>1952</td>
<td>1097</td>
</tr>
<tr>
<td><strong>Indian</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top 5</td>
<td>16%</td>
<td>12%</td>
<td>1521</td>
<td>1361</td>
</tr>
<tr>
<td>Top 10</td>
<td>16%</td>
<td>13%</td>
<td>2678</td>
<td>2374</td>
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</table>

1.4.5 Brand Performance

The top 100 brands in the IPM cumulatively contributed to approximately 18 percent of the total market value with a growth rate of approximately 11 percent. This value has marginally gone up from 17 percent in 2010. Of the top 100 brands, 44 brands were more than 100 crore INR in value. Indian companies and the MNCs had an equal share in the top 100 with 50 products each. 76 of the top 100 products were acute therapy products while 24 were chronic therapy products. In terms of therapy, there were 21 anti-infective products, 12 gastro, 11 anti-diabetics, 10 respiratory and 9 cardiac therapies (AIOCD AWACS Market Intelligence Report 2013).

1.4.6 Town-class Penetration

Increased access to healthcare, improved infrastructure and greater penetration of
pharma companies into extra urban regions has led to an enhanced contribution and a higher growth from lower town classes in the IPM. Urban regions (metros and Class I) contribute to approximately 60 percent of the IPM sales while the extra-urban regions (Class II to VI towns and rural) contribute to approximately 40 percent. Growth is driven mainly by the Class I towns (10 percent) and rural areas (14.5 percent). Town Class contribution to Indian Pharmaceutical market and growth rate is depicted in Table 1.5.

**Table 1.5: Town Class contribution to IPM and growth**

<table>
<thead>
<tr>
<th>Town Class</th>
<th>Contribution to IPM</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metros</td>
<td>30%</td>
<td>8%</td>
</tr>
<tr>
<td>Class I towns</td>
<td>31%</td>
<td>10%</td>
</tr>
<tr>
<td>Class II-VI towns</td>
<td>19%</td>
<td>10%</td>
</tr>
<tr>
<td>Rural</td>
<td>20%</td>
<td>14%</td>
</tr>
</tbody>
</table>

**1.5 MAJOR PHARMACEUTICAL COMPANIES IN INDIA**

**Table 1.6: Leading Indian players by Sales and Market Capitalization (INR Cr) in FY 2013.**

<table>
<thead>
<tr>
<th>Company’s name</th>
<th>Net Sales * (In Crores)</th>
<th>Market Capitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Reddy’s Laboratories</td>
<td>8434.00</td>
<td>43,721.38</td>
</tr>
<tr>
<td>Cipla</td>
<td>8202.42</td>
<td>32,281.45</td>
</tr>
<tr>
<td>Lupin</td>
<td>7122.51</td>
<td>42,535.17</td>
</tr>
<tr>
<td>Ranbaxy Labs</td>
<td>6304.54</td>
<td>19,828.62</td>
</tr>
<tr>
<td>Aurobindo Pharma</td>
<td>5425.10</td>
<td>16,027.22</td>
</tr>
<tr>
<td>Cadila Health Care</td>
<td>3675.70</td>
<td>19,797.13</td>
</tr>
<tr>
<td>IPCA Labs</td>
<td>2778.42</td>
<td>10,256.20</td>
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<tr>
<td>Torrent Pharma</td>
<td>2766.23</td>
<td>9,464.63</td>
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<tr>
<td>Glaxo Smithkline</td>
<td>2546.15</td>
<td>21,461.20</td>
</tr>
<tr>
<td>Wockhardt</td>
<td>2471.18</td>
<td>7,177.15</td>
</tr>
<tr>
<td>Sun Pharma</td>
<td>2432.14</td>
<td>130,017.31</td>
</tr>
</tbody>
</table>

Source: Extracted from www.moneycontrol.com
1.6 REASONS FOR GROWTH OF INDIAN PHARMACEUTICAL INDUSTRY

It is often said that the pharma sector has no cyclical factor attached to it. Irrespective of whether the economy is in a downturn or in an upturn, the general belief is that demand for drugs is likely to grow steadily over the long-term. This section gives a perspective of the Indian pharma industry.

1. **Sekhar (2012)**, India with a population of over a billion is a largely untapped market. In fact, the penetration of modern medicine is less than 30% in India. To put things in perspective, per capita expenditure on health care, in 2012, in India is US$ 61, while the same countries like Brazil is US$ 1056, and Malaysia US$ 410 (World Bank Report). It is expected that Per capita sales of pharmaceuticals will grow at a CAGR of 16.3 percent to US$ 27 by 2016 (India Brand Equity Foundation Report 2013). Parveen, Usha, Naik, & Akki (2013) stated that the growth of middle class in the country has resulted in fast changing lifestyles in urban and to some extent rural centers. This opens a huge market for lifestyle drugs, which has a very low contribution in the Indian markets.

2. Indian manufacturers are one of the lowest cost producers of drugs in the world. India’s cost of production is nearly 60 percent lower than that of the US and almost half of that of Europe (India Brand Equity Foundation Report 2013). Labour costs are 50-55 percent cheaper than in Western countries. The cost of setting up a production plant in India is 40% lower than in Western countries. Cost-efficiency continues to create opportunities for Indian companies.

3. India has the largest number of USFDA-approved manufacturing plants outside the US. India has 2,663 FDA-approved drug products. India has over 546 USFDA-companies holding market authorizations with United Kingdom Medicines and Healthcare products Regulatory (UKMHRA) (India Brand Equity Foundation Report 2013).

4. Indian pharmaceutical industry possesses Low-cost, highly skilled set of English speaking labour with proven track record in design of high technology manufacturing devices. This adds to the competitive advantage of the Indian
companies. The strength in chemistry skill also helps Indian companies to develop processes, which are cost effective.

5. Large number of drugs going off-patent in Europe and in the US offers a big opportunity for the Indian companies to capture this market. Since generic drugs are commodities by nature, Indian producers have the competitive advantage, as they are the lowest cost producers of drugs in the world.

6. Opening up of health insurance sector and the expected growth in per capita income are key growth drivers from a long-term perspective. This leads to the expansion of healthcare industry, of which pharma industry is an integral part. Penetration of health insurance is expected to more than double by 2020. Increasing penetration of health insurance is likely to be driven by government-sponsored initiatives such as RSBY and ESIC.

7. Being the lowest cost producer combined with FDA approved plants, Indian companies can become a global outsourcing hub for pharmaceutical products.

8. In recent years, several foreign players have made acquisitions in India to get a foothold in the country’s pharma market and leverage on the technical and cost efficiency of Indian companies. Increasing number of companies are forming JVs to benefit from research and development. Large firms from developed markets are venturing with Indian majors to develop new medicines.

1.7 STATEMENT OF THE PROBLEM

There can be little doubt that doctors are an important target audience (direct customers) for pharmaceutical companies and that it is important for pharmaceutical companies to understand the key attributes used by doctors to form images of the companies. The previous studies revealed that marketing strategies can provide many significant strategic advantages. The widespread opinion is that promotional mix of the pharma company has an advantage in influencing decision makers (Doctors) by making positive perception about the company and its brand. In the Indian pharmaceutical environment, it seems to be that pharmaceutical companies have not considered corporate image building exercises on the priority. Thus the present research study was undertaken to determine
and rank the attributes currently used by prescribers and the study would be beneficial to examine a part of the Indian pharmaceutical market and to consider prescribers’ perceptions across those with similar training and cultural backgrounds.

On going through the literature and review of different books and articles, it has become an area of interest to find out the marketing strategies and especially promotional tools and analyzing the effect of those strategies on physicians’ attitude and perception in the Uttarakhand area. The study on “Marketing Strategies and Promotional Mix Fit for Pharmaceutical Industry: A Case Study of Uttarakhand” is unique in many aspects, as not much work has been done so far on this aspect of marketing of prescription products in Uttarakhand. This research was an effort to study the marketing challenges faced by companies and finally provide some suggestions. The accessibility to the data required for the study was possible, as the researcher was familiar with topography of state. Researcher believed that the study is contributed for overall development of marketing activities. The research study develops its objectives, scope, hypothesis, data collection analysis which are discussed in the appropriate place in this thesis.

1.8 OBJECTIVES OF THE STUDY

The main objective of the study is to make in depth analysis of Physicians’ attitude and perception regarding the promotional mix of prescription product and the present marketing strategies of prescription products in general & in Uttarakhand region particular. It has also been attempted to identify various strategies that would fit-in pharmaceuticals to market their prescription product in Uttarakhand region. The main objectives of the study were as follows:

(i) To study the existing marketing strategies with thrust to promotional strategies in pharmaceutical companies in Uttarakhand.

(ii) To identify the physicians’ perception towards the marketing strategies with thrust to promotional tools.

(iii) To study the physicians’ attitude towards brands.
(iv) To suggest the innovative marketing strategies with thrust to promotional tools to pharmaceutical industry.

(v) To determine the market segmentation strategies in the pharma industry.

(vi) Recommend a package of measures to improve the effectiveness of marketing strategy with thrust to promotional tools.

1.9 HYPOTHESES OF THE STUDY

Since the study was related to marketing strategies with thrust to promotional tools of prescription products in the area, the following null hypotheses were formulated and tested for the research study:

H0₁: Promotional tools do not influence attitude of physicians towards brands.
H0₂: Promotional tools do not influence perception of physicians towards brands.
H0₃: There is no significant relationship between personal characteristics of physicians and attitude towards brand.
   a) There is no significant relationship between age of physicians and attitude towards brand.
   b) There is no significant relationship between qualification of physicians and attitude towards brand.
H0₄: There is no significant relationship between customer satisfaction and brand loyalty.

1.10 RESEARCH METHODOLOGY

This section describes the questionnaire design, sampling method and data collection method used in this study. In order to develop a reliable and valid scale, to attain the objectives of the study, validity, and reliability tests have also been conducted. With an attempt to achieve the specified objectives the researcher had used the following methodology which was followed by hypotheses testing:
1.10.1 Universe of the Study

The objective of the research required the study of Physicians and Medical Representatives of Pharmaceutical Companies doing marketing of ethical medicines in Uttarakhand region. The universe of study comprised of prescribers of ethical medicines (Physicians) and Pharmaceutical companies working in ethical medicines.

1.10.2 Sampling and Data Collection

**Primary Data:** For the study of marketing strategy and sale promotion tools, the targeted minimum sample size was 150 for Medical Representatives and 150 for doctors. As the state is divided in two geographical regions namely Kumaun and Garhwal, hence, the targeted sample size for each region for managers and doctors was 75 and 75 respectively.

(a) Sample of the Physicians

The sample units include the physicians of Kashipur, Haldwani, Rudrapur, Haridwar, Srinagar and Dehradun of the state Uttarakhand. The rationale for selecting these cities was that their population and economic base which were roughly representative of industrial development and population diversity of the region. Random sampling method was used for the collection of data. Samples taken from the selected cities are depicted in the following Table 1.7.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Kumaun Region</th>
<th>Garhwal Region</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rudrapur</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>2</td>
<td>Haldwani</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>Kashipur</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>75</strong></td>
<td></td>
<td><strong>75</strong></td>
</tr>
</tbody>
</table>
(b) Sample of the Medical Representatives

The sample units include Medical Representatives of Kashipur, Haldwani, Rudrapur, Haridwar, Srinagar and Dehradun of the state Uttarakhand. The rationale for selecting these cities was that the cities are the sales headquarters of mostly pharmaceutical companies. The sample size for Medical Representatives was 150. 200 questionnaires were distributed, out of which 163 questionnaires were received back and finally 150 questionnaires were selected.

Secondary Data: Even though the study is almost exclusively based on primary data, it was also important to collect the secondary data from published and unpublished literature using various recourses. Data relating to market segmentation, marketing strategy, and several promotional tools was collected from the sources like government publications, Indian Drug Manufacturing Association (IDMA), Department of Pharmaceuticals, Organisation of Pharmaceutical Producers of India (OPPI), World Health Organisation, Food and Drugs Association (FDA), Publications, Journals, Various Libraries and Management research institutes, Pharmaceutical colleges and Companies’ websites as when required by the researcher.

1.10.3 Questionnaire Design and Measurement

This is an exploratory cum descriptive research design. Cross-sectional, and survey method using personal interaction is used. Personal interaction is limited to administration of questionnaires to collect required data. After developing item pools to measure several marketing strategy and promotional tools, two questionnaires were constructed to measure the response of the physicians and the managers lying under the sample of the present study, regarding the medicines, marketing strategy and promotional tools applied by the company to its sales promotion.
1.10.4 Construction of the Questionnaire for the Physicians

On the basis of the outcome of unstructured interviews and literature survey, 57 measures were developed to collect information on Nine factors. These factors are; attitude, personal selling, sponsorship, educational promotional tools, scientific tools, personal touch, and brand loyalty respectively. Different factors and the number of measures included under them are depicted in the Table 1.8.

First part of the questionnaire, was designed to obtain demographic information about the physicians’ age, gender, income, educational qualification, experience, location of practice, marital status, and patient load etc. second part of the questionnaire includes questions to record the response of the physicians regarding several factors. These factors are attitude, personal selling, sponsorship, educational promotional tools, scientific tools, personal touch, and brand loyalty respectively.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Factors Identified</th>
<th>No. of Measures used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Attitude</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Perception</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>Personal selling</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>Sponsorship</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Educational promotional tools</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Scientific promotional tools</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Personal touch</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>Customer Satisfaction</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>Brand loyalty</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>58</strong></td>
</tr>
</tbody>
</table>

The respondent was asked to show his/her degree of agreement or disagreement about the particular item/ statement. Response was recorded in the five point Likert scale
ranged as 1 for ‘strongly agree’, 2 for ‘agree’, 3 for ‘can’t say’, 4 for ‘disagree’, and 5 for ‘strongly disagree’.

1.10.5 Construction of the Questionnaire for the Medical Representatives

Similarly, the second questionnaire was constructed to measure the response of the Medical Representatives of the pharmaceutical companies, marketing ethical medicines in Uttarakhand region. First part of the questionnaire includes demographic information which includes gender, designation, age, qualification, and experience, form of the company, company name, therapeutic category, and turn over etc. Second part of the questionnaire constructed to measure the response of the medical representatives of the sampled companies regarding market segmentation. This part had a list of nine statements for market segmentation, used by most of the pharmaceutical companies. The respondent was asked to show his/her degree of agreement or disagreement about the particular item/statement. Response was recorded in the five point Likert scale ranged as 1 for ‘strongly agree’, 2 for ‘agree’, 3 for ‘can’t say’, 4 for ‘disagree’, and 5 for ‘strongly disagree’.

1.10.6 Coding and Editing of Data

After getting the entire questionnaire filled by the respondents, these were properly examined to assure that all information provided by the respondents is complete and consistent. If any questionnaire was found incomplete, it was dropped and finally 150 questionnaires filled by the Physicians and 150 questionnaires were filled by the Medical Representatives were taken for the study. To assure the computer applicability in data processing up to the maximum possible extent, suitable numerical codes were given to all the responses. By this way the data of the survey was stored directly into the database. Later it was processed in the statistical software SPSS version 16.0. Frequency and cross distribution tables were obtained with the help of the SPSS. These tables are produced in appendices.
1.10.7 Data Analysis

After editing and coding, the data were analyzed to test the hypotheses of the study. The independent variables illustrated in the questionnaire constructed for measuring response of the doctors are; demographic variables, personal variables. To test different hypotheses various statistical tools such as mean, median, mode, standard deviation, Shapiro-Wilk (normality test), Skewness, Kurtosis, graphical and diagrammatical figures was used to fulfill the objectives of the study. The Mann-Whitney U-Test was used for nonparametric comparisons (group=2), Kruskal-Wallis Test used for nonparametric comparison (group>2) and The Spearman rank-order correlation coefficient (Spearman’s correlation) is a nonparametric measure of the strength and direction of association that exists between pairs applied to achieve the objectives of the study. Some non-parametric tests i.e. ANOVA, CHI-SQUARE TEST etc were used to check the significance of difference due to gender, income of physician, qualification, practicing status, location of practice, duration of practice and patient load. Analysis and Results are explained in chapter no. 4 and 5.

1.11 LIMITATIONS OF THE STUDY

The researcher is aware about the limitations of research and this research is not an exception. The limitations of my study are as followings:

1. The study is confined to Uttarakhand only due to time and cost limitation.
2. The study is survey based, the study is entirely based on doctors and companies representatives’ responses which may vary and change the outcomes.
3. Comparatively a small sample size has reduced the power of statistical analysis. A large in scale field survey which could help in developing the bigger data which could provide greater generalisability of the result.
4. Researcher has assumed that the population was normally distributed.
5. The researcher and the study will not claim that it is the final word in the study on Marketing of prescription medicines. This study will open new avenues of
research in strategic marketing, marketing management, and consumer behavior as it was neglected till now in the region. There is scope for further research with emphasis on various aspects of marketing and sales management, consumer behavior and pharmacology in Uttarakhand.

6. Since, it is a study of companies which are heterogeneous in nature, many of the findings and conclusions are general in nature and may not be strictly specific to a particular company.

7. This is a state-level study and hence no comparisons have been made with pharmaceutical units in other states.

1.12 DIFFERENT TERMINOLOGIES OF DRUG

**Drug or pharmaceutical preparation (a medicine):** Drug includes any substance or mixture of substances manufactured, sold or represented for use in—

(a) The diagnosis, treatment, mitigation or prevention of a disease, disorder, abnormal physical state, or the symptoms thereof, in man or animal; or

(b) Restoring, correcting or modifying organic functions in man or animal

- **Generic Medicine:** Medicines that are identified by a descriptive or official name, as opposed to branded medicines
- **Over the Counter (OTC) Medicines:** Medicines used for self-medication purposes up to Schedule K and can be sold without a doctor's prescription.
- **Proprietary Medicines:** Pre-packaged medicines intended for self-medication, which are manufactured, packaged and labeled in accordance with the requirements of the registration authority in the country of distribution and are marketed directly to the Consumer.
- **Ethical Medicines:** Branded prescription medicine.
- **Pharmaceutical chemicals:** Production involves the manufacture of the active ingredients in a chemical plant and is closely similar to - indeed
can be considered part of - the fine chemical industry which also covers chemicals for such products as dyes and pesticides.

- **Pharmaceutical Preparations**: primarily concerned with the physical operations required to produce medicines in marketable form

- **Active Ingredients**: Those substances that affect the desired cure, in other words they are active therapeutically.

- **Inactive Ingredients**: Also called recipients, and includes preservatives, diluents, stabilizers, etc

- **Prescription Medicines**: Medicines that may only be supplied to the public on prescription.

- **Innovator Drug**: A drug that receives a patent on its chemical formulation or manufacturing process, obtains approval from the FDA or any regulatory authority after extensive testing, and is sold under a brand name.

- **Branded Medicines**: Medicines that are identified by a trade name

- **Patented Medicines**: Medicines whose sale is protected by patent rights.

- **Breakthrough Drug**: The first brand name drug to use a particular therapeutic mechanism - that is, to use a particular method of treating a given disease.

- **Me-Too Drug**: A brand-name drug that uses the same therapeutic mechanism as a breakthrough drug and therefore competes with it directly.

- **Single-Source Drug**: A brand-name drug that is still under patent and thus is usually available from only one manufacturer.

- **Multiple-Source Drug**: A drug available in both brand name and generic versions from a variety of manufacturers.
1.13 STRUCTURE AND CHAPTER SCHEME

The thesis is structured in five chapters and it is compiled as follows:

Chapter I: “Introduction including Research Methodology”: This Chapter is segmented in two sections. The first section provides the overview of Pharmaceutical industry at global and national level. A brief discussion regarding the evolution of pharma industry and current trends in Indian pharma industry has been made.

The second section is dedicated to the objectives of the study, statement of hypothesis, research methodology, choice of method, designing the research instrument, data collection and sample characteristics, sample size and selection, and limitations of the study and lastly structure & chapter scheme.

Chapter II: “Review of Literature”: Review of Literature is an expanded review of the existing literature related to the current topic. This chapter provides the theoretical support in the development of the study.

Chapter III: “Marketing Strategies and Promotional Tools for Pharmaceutical Companies”: This chapter is used to provide the concepts related to marketing strategies, marketing mix, branding and all the other related aspects.

Chapter IV: “Analysis of Survey Data”: This chapter provides the interpretation of data along with the results determined based on the data collected.

Chapter IV: “Conclusions, Findings, and Recommendations”: This chapter is used to provide final conclusion based upon the discussion and findings. As this chapter constitutes the last chapter of the research and is being used to provide recommendations.
“Appendices”: At the culmination of the thesis, Annexure-I has the Bibliography. Annexure-A, Annexure-B, and Annexure-C contain the comprehensive tables.
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