Innovating in India: Opportunities for German Firms

(German Title: Innovieren in Indien: Chancen für deutsche Unternehmen)

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Research Areas:
• Fuzzy Front-end of Innovation
• Intellectual Property Rights
• Open Innovation
• Innovation in SMEs
• Globalization of Innovation
• Mobile Commerce / Banking

Research Project “Global Innovation”
Innovation management related research with special focus on chances & challenges in India
Research Project Global Innovation

*Focus of our studies...*

- Frugal Innovations in a Global Context
- India’s Role as a Location for Global R&D
- Outward FDI from India
- India’s National Innovation System
- Business Opportunities at BoP in India
- India as a Lead Market

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India: Now & Then?

*Why it makes sense to partner India*

<table>
<thead>
<tr>
<th>Indicator</th>
<th>1947</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (1951)</td>
<td>361 million</td>
<td>1.21 billion</td>
</tr>
<tr>
<td>Life expectancy at birth (1951-2007)</td>
<td>32</td>
<td>66 (M) / 71 (F)</td>
</tr>
<tr>
<td>Literacy</td>
<td>12%</td>
<td>74%</td>
</tr>
<tr>
<td>Per capita income (Rs; RBI &amp; IMF data)</td>
<td>Rs. 255</td>
<td>Rs. 70,654</td>
</tr>
<tr>
<td>Per capita income (USD; 1991-2011)</td>
<td>$334</td>
<td>$1,389</td>
</tr>
<tr>
<td>Universities</td>
<td>20</td>
<td>544</td>
</tr>
<tr>
<td>Colleges</td>
<td>~ 500</td>
<td>31,324</td>
</tr>
</tbody>
</table>

*Based on various publications and data sources*
Expected Development of India’s Economy

*Sustained growth to catapult India in the top league*

<table>
<thead>
<tr>
<th>Rank</th>
<th>Land</th>
<th>GNP in Mrd. USD (Kurs 2009)</th>
<th>Rank</th>
<th>Land</th>
<th>GNP in Mrd. USD (Kurs 2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>USA</td>
<td>14.256</td>
<td>1</td>
<td>China</td>
<td>51.860</td>
</tr>
<tr>
<td>2</td>
<td>Japan</td>
<td>5.968</td>
<td>2</td>
<td>USA</td>
<td>37.876</td>
</tr>
<tr>
<td>3</td>
<td>China</td>
<td>4.909</td>
<td>3</td>
<td>India</td>
<td>31.938</td>
</tr>
<tr>
<td>4</td>
<td>Deutschland</td>
<td>3.347</td>
<td>4</td>
<td>Brasilien</td>
<td>9.235</td>
</tr>
<tr>
<td>5</td>
<td>Frankreich</td>
<td>2.649</td>
<td>5</td>
<td>Japan</td>
<td>7.664</td>
</tr>
<tr>
<td>6</td>
<td>UK</td>
<td>2.172</td>
<td>6</td>
<td>Russland</td>
<td>6.112</td>
</tr>
<tr>
<td>7</td>
<td>Italien</td>
<td>2.113</td>
<td>7</td>
<td>Mexiko</td>
<td>5.800</td>
</tr>
<tr>
<td>8</td>
<td>Brasilien</td>
<td>1.572</td>
<td>8</td>
<td>Deutschland</td>
<td>5.707</td>
</tr>
<tr>
<td>9</td>
<td>Spanien</td>
<td>1.460</td>
<td>9</td>
<td>UK</td>
<td>5.628</td>
</tr>
<tr>
<td>10</td>
<td>Kanada</td>
<td>1.326</td>
<td>10</td>
<td>Indonesien</td>
<td>5.358</td>
</tr>
<tr>
<td>11</td>
<td>Indien</td>
<td>1.205</td>
<td></td>
<td>Frankreich</td>
<td>5.344</td>
</tr>
</tbody>
</table>

Quelle: Weltbank, PwC-Berechnungen

Innovations in and for Emerging Markets

*“Good enough” quality often key to success*

Frugal innovations seek to minimize the use of material and financial resources in the complete value chain with the objective of reducing the cost of ownership of a product while fulfilling or even exceeding pre-defined criteria of acceptable quality standards.
Maruti A-Star
A car primarily conceptualized for India

- A compact car with overall length of 3500 mm and seating capacity for 5
- Euro V compliant engine that emits CO2 as low as 103 gms per kilometer; high fuel-efficiency with a mileage of 19.59 kilometers
- Basic design at Suzuki headquarters; styling at the R&D center in India
- External cooperation in India: Germany’s Mann+Hummel group developed an air intake filter system to reduce the component weight by 50% and enabled cost savings per component by approximately 25%
- 33% share in Maruti’s exports (sold as Suzuki Alto and Nissan Pixo in Europe)

“Within 3 years of its launch the A-Star has been sold over 2 million times, making it a resounding commercial success.”
Source: Tiwari and Herstatt (2012b)

Basic Characteristics of Frugal Innovations
Value-added for customer & manufacturer

- Affordability for customer segments large enough to enable economies of scale and reduce costs of production & distribution
- High volume opportunities to compensate for low profit margins
- Robustness to deal with infrastructure deficiencies such as voltage fluctuation, abrupt power-cuts, dust, and extreme temperatures
- Fault resistance to cope with unsophisticated / semi-literate or even illiterate users
- Low costs of usage, maintenance & repair

Source: Tiwari and Herstatt (2012b)
All graphics/photos used are property of their respective owners. Used here for non-commercial purpose of illustrating India’s attractiveness as a R&D location.
The Lead Market Approach
An updated and extended model

“The local innovations in such markets become useful elsewhere as the environmental characteristics that stimulated such innovations diffuse to other locations.”

(Bartlett and Ghoshal, 1990:243)

India’s Demand Advantage
India’s economic pyramid has similarities...
India’s Export Advantage

*Increasing acceptance for Indian goods*

<table>
<thead>
<tr>
<th>FY 1990-91</th>
<th>FY 2010-11</th>
<th>Growth</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.1</td>
<td>254.4</td>
<td>1,302%</td>
<td>34%</td>
</tr>
</tbody>
</table>

India’s exports to selected world regions in billion US$. Based on RBI data.

Primary factors responsible for India’s success in exports are:

- Increased quality due to competition pressure in an open economy
- Infusion of new technology & fresh capital due to FDI by MNCs
- Policy initiatives (e.g. creation of Special Economic Zones (SEZs) and signing of free trade agreements (FTAs) with South Asian and ASEAN countries)

India’s Export Advantage

*Exported goods are not mere carpets…*

India’s export of engineering goods in million US$.

India’s export of transport equipments in million US$.

Technology and Innovation Management

Hamburg University of Technology
India’s Trade with Selected Countries

Have traditional partners “missed” chances?

China, two decades back without any significant trade with India, has advanced to its most important partner. Its key to success lies in offering low-cost products with acceptable quality.

Trade volume in billion USD; based on RBI data

Key Implications…

• India has emerged as a “lead market” for frugal innovations.
• Demographic pressures in developed countries require firms to seek market opportunities in promising future markets, e.g. India.
• Increasing global competition for resources, environmental concerns, and economic development in developing countries would further boost the need for frugal innovations.
• Financial constraints and cost pressures would increase the demand for “low cost, good enough” solutions in the developed countries too.

„Das Land der Ideen trifft das Land der Chancen“
Dr. Jürgen Hambrecht, ehemaliger Vorsitzender des Asien-Pazifik-Ausschusses der Deutschen Wirtschaft
Primary References


Note: Working Papers of TIM/TUHH can be downloaded from:
http://www.tu-harburg.de/tim/publikationen/arbeitssatire.html, or from:
http://www.global-innovation.net/publications/index.html