Frugal Innovation – Auf was es bei der Umsetzung ankommt!

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Agenda

- What are Frugal Innovations?
- Why Frugal Innovations are Important
- Dacia Logan: Frugal Innovation Made in Europe
- Lessons Learned: Success Factors of Frugal Innovations
A Definition of Frugal Innovations

Frugal Innovations…

- … offer great value for money
- … target price sensitive markets
- … do not aim at technological superiority independent of cost/price
- … are simple and robust solutions that deliver what price sensitive customers ask for and not more than that
- … do not offer bad or shitty quality. They deliver exactly the level of quality demanded by customers for an attractive price.

Other terms: „High Value at Low Cost Innovations“, „Affordable Value Innovations“, “Value-for-Money Innovations”, “Jugaad Innovations”.
Some Examples of Frugal Innovations

- Bosch
- Tata
- Crop Tiger 30
- Siemens
- Dacia
- Nokia
What are Frugal Innovations?

Why Frugal Innovations are Important

Dacia Logan: Frugal Innovation Made in Europe

Lessons Learned: Success Factors of Frugal Innovations
1. Success in price sensitive markets depends on a firm’s capability to develop and launch frugal innovations (e.g. Nokia, Claas, Basler). Focus on premium segments and niches is insufficient or even dangerous. Key to success in emerging markets!

2. Local firms grow in price sensitive markets and become major competitors in price sensitive and later even in medium and high end markets (e.g. SANY, Haier, Yingli Solar, Huawei, ZTE, Alibaba).

3. Frugal Innovations typically come from emerging markets and may find their way into developed markets (reverse innovation); e.g. Siemens, GE, P&G, Renault/Dacia.
Leveraging Frugal Innovations Across Multiple Markets: The Case of Claas

Sources: Ernst, Dubiel & Fischer (2009), Claas.
The Strategic Importance of Frugal Innovations

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Consequences of Missing Frugal Innovations in Important Markets

1998: Market Share in China PM/Schwing = 70%
      SANY: Revenues = 50 Mio. Euro

2004: Market Share in China PM/Schwing < 5%

2006: China accounts for 60% of the world-wide concrete market


If you do not win the battle in the largest market, it is difficult to be the world market leader!
Entering Emerging Markets through Acquisitions - The Case of Trumpf

Machine tool manufacturer Trumpf acquires Chinese rival JFY

German machine tool maker Trumpf has taken over China's engineering firm Jiangsu Jinfangyuan (JFY). The deal is backed by the government and is a rare case of a German family-owned business buying up its Chinese rival.

Trumpf had acquired a majority stake of 72 percent in Chinese mechanical engineering group Jiangsu Jinfangyuan (JFY) in an effort to expand its presence in the world’s most important engineering market, the medium-sized, family-owned manufacturer announced Wednesday.

Trumpf, which is based in Ditzingen, didn’t disclose the price of the acquisition, but said the deal had been two years in the making and was fully backed by authorities in Beijing.

"It is very unusual that a direct investment like this has been made possible for us especially in mechanical engineering, which the Chinese government has classified as a key sector," Trumpf Chairwoman Nicola Leibinger-Kammüller told a news conference.

Leibinger-Kammüller also said that the takeover would give Trumpf access to an extremely dynamic segment of the Chinese market, enabling the firm to accompany customers as they grew.

Jiangsu Jinfangyuan manufactures machine tools for sheet metal processing, and is said to be the Chinese market leader for punching and bending machines. The company, which is based in Yangzhou, was privatized in 1997 and currently employs about 700 people. Sales reached about 70 million
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Reverse (Frugal) Innovation: “Reversing the Flow of the River Ganges”

Source: Ernst, Sawhney & Dubiel (2010).

Developed markets:
- Siemens CT scanner SOMATOM Emotion
- P&G cough syrup
- Dacia Logan & Sandero
- P&G washing powder, nappies
- Renault Mégane
- GE pedestrian safe bumpers
- Siemens mobile phone, data based traffic measurement system

Emerging market 1:
- Bosch components for Tata Nano
- P&G local detergents and cosmetics versions
- Siemens CT scanner SOMATOM Spirit

Emerging market 2:
- NSN Village Connection
- SAB Miller manioc beer

Developed markets:
- Microsoft Windows operating system
- Airbus A320 server airplane
- GE MAC 800 electrocardiogram
- NSN Vitrage Connection

Source: Ernst, Sawhney & Dubiel (2010).
What are Frugal Innovations?

Why Frugal Innovations are Important

Dacia Logan: Frugal Innovation Made in Europe

Lessons Learned: Success Factors of Frugal Innovations
The Dacia Product Family: From the Logan to the Lodgy

- Logan MCV
- Sandero
- Lodgy
- Duster
- Dokker
• Attitudes and mindsets of employees: development of a new simple and robust product vs. development of an established high-tech product

• No experience with low-end, frugal products

• Radical reduction of development costs (target: 3000 Euros)

• No experience with low-end (emerging) markets (no customer insight)

• Cannibalization of existing products

• Brand pollution

• High risks (market, technology, financial, brand)
The Dacia Logan Project: Solutions

- Executive support (CEO: Louis Schweitzer)
- Creation/Acquisition of a separate firm/brand (Dacia/Romania)
- Selection of an experienced project leader (Mr. Hurtiger)
- Selection of a cross-functional and autonomous development team
- Partnering with key suppliers with experience in frugal innovation (Siemens/VDO (SMART Initiative), later Continental (Dr. Neumann))
- Strict adherence to cost targets (“design to cost”, “design to build”) during the entire development process and at critical milestones
- Use of existing technology and platforms plus development of new and affordable technical solutions

Source: Kukreja & Dubiel (2010)
Understanding the key functionalities relevant to customers and breaking these down into technical solutions with lowest cost possible ("target costing")

Lots of interaction between engineers, designers, marketing, production etc.

Cost of ownership approach (maintenance, life-cycle of use approach)

Localizing of value chain (production, suppliers) in low cost countries

Synergies (dealerships)

Product family strategy

2 brand strategy (varies according to the market; later: "Dacia by Renault")

Clear value proposition (smart branding campaign)
The Dacia has become a Top Brand and is a Major Driver for Renault’s Growth in Emerging and Developed Markets!

„Dacias Geschichte ist eine Wundergeschichte, damit hätte niemand gerechnet. Die Konkurrenz will das unbedingt kopieren, egal ob Opel oder Volkswagen.“
(Helmut Becker, ehemalige Chefvolkswirt der BMW AG.)

Key Figures:
Sales 2013: € 4,5 Billion
Growth New Car Sales
1st 6 months 2014: 36%
Market Share 2014: 3% (Europe)
Market Position Europe 2014: # 15

„Mir ist ein Auto wichtiger als ein Statussymbol“
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- Lessons Learned: Success Factors of Frugal Innovations
Lessons-Learned: How to do Frugal Innovation!

1. Change the **corporate mindset** (strategy)
2. Achieve **executive support**
3. Entrepreneurial **project leader** and **dedicated/autonomous cross-functional team**
4. Deliver products/solutions at **dramatically lower price points**
5. Understand your **new customers** (markets)
6. Adopt a ‘**Gandhian**’ **engineering approach** (‘design to cost’; ‘cost of ownership’)
7. Relocate **R&D in emerging markets**
8. **Localize** value chains
9. **Partnering** and/or **Mergers & Acquisitions**
10. Do **not** worry about the **brand**
11. Leverage frugal innovations across **multiple markets** (incl. **reverse innovation**)
Frugal innovations...

- ...allow the expansion beyond high-end segments into good-enough and price sensitive segments, esp. in emerging markets (attack local champions on their home turf).

- ... help to access these new and fast growing market segments, esp. in emerging markets.

- ... preempt local champions from attacking leading firms in their home markets based on their frugal (reverse) innovation.
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Thank you – Questions please!

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Appendix
Literature


- Amit Kukreja and Anna T. Dubiel 2010. “Paris-Pitești – How the Dacia Logan is changing the innovation rules in the automotive industry”.

### Characteristics of SMART products

<table>
<thead>
<tr>
<th>Simple</th>
<th>Limited to basic functionality, but incl. new unique features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance-friendly</td>
<td>Maintenance interval longer than lifetime</td>
</tr>
<tr>
<td>Affordable</td>
<td>Suitable price level for customers with low budget</td>
</tr>
<tr>
<td>Reliable</td>
<td>Robust against increased climate conditions (heat, dust, water, …)</td>
</tr>
<tr>
<td>Timely-to-market</td>
<td>Faster innovation cycle</td>
</tr>
<tr>
<td></td>
<td>Higher flexibility / quicker responsiveness to market needs</td>
</tr>
</tbody>
</table>

SMART innovations help to succeed both locally and globally.

Sources: Ernst, Dubiel & Fischer (2009), Siemens (2010), Siemens Pictures of the Future (2009).
The challenge
Deliver parts (i.e. car electrics, braking systems, fuel injection) for the Tata Nano selling for **1,700 EUR** – the price of an air-conditioning system in a modern German car. The delivered parts have to enable the five-seater to meet high emissions standards taking effect in India in 2010 and have the usual „Bosch quality“.

The solution
• Local development at Bosch’s R&D site in Bangalore (costs down, local mentality…)  
• Close interaction with the customer (Tata Motors)  
• Clearly defined parts’ specifications (e.g. fewer injections per cycle accepted)  
• No outdated technologies: the market demands a modern, robust and simple solution  
• Application of “smart” technological solutions  
  o For the gasoline injection system the injection technology for two-wheelers was honed and adapted for use in a car  
  o For the diesel engine a tried-and-tested product was simplified  
  o The injection pressure is not generated by a high-pressure pump but by a more cost-effective plug-in pump

Sources: Lamparter 2008, Bosch homepage, personal interview.
Understanding your New Customers: Nokia in Emerging Markets

**Aim:** Make low-cost (frugal) phones for emerging markets

**Situation:**
Finnish engineers trying to design a phone for an illiterate customer on the Indian subcontinent.

**Solution:**

- Listening to customers in China, India, and Nepal
- Visits of Nokia’s executives in customer’s homes in India
- Experience tropical weather conditions
- Visit slums in Kenya

- Understanding how illiterate people live in a world full of numbers and letters
- Mobiles often the most expensive item customers buy
- Moisture resistance, dustproof keypads, special screens more legible in bright sunlight
- Learned that people form buying clubs
- “Iconic” menu and address book
- Phones have to be more durable
- Look for new ways of encouraging self-financing
R&D goes Global: Access to Talent and Closeness to Markets/Customers are the Main Drivers.
Emerging markets usually encompass different market segments with different consumer needs and purchasing power.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Premium Market</th>
<th>Middle Market („Good-enough-market“)</th>
<th>Commodity Market („Lower-end Market“)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product functionality</strong></td>
<td>High-end (many state-of-the-art features)</td>
<td>Key/decisive user features only</td>
<td>Low-end (basic standard user features to meet basic needs; undifferentiated products)</td>
</tr>
<tr>
<td><strong>Product price</strong></td>
<td>High (according to status as international brand)</td>
<td>Significantly (ca. 25–40%) below premium segment</td>
<td>Low (typically 40–90% of premium price)</td>
</tr>
<tr>
<td><strong>Customers</strong></td>
<td>High purchasing power</td>
<td>Value-seeking with mid-level incomes</td>
<td>Low income</td>
</tr>
<tr>
<td><strong>Players/Competitors</strong></td>
<td>Multinationals</td>
<td>Local companies with global ambition and multinationals</td>
<td>Local companies</td>
</tr>
<tr>
<td><strong>Market share (% revenues)</strong></td>
<td>Ca. 10–15%</td>
<td>Ca. 60–65%</td>
<td>Ca. 25%</td>
</tr>
<tr>
<td><strong>Importance MNCs / MNCs competitive position</strong></td>
<td>Very high / traditionally strong position</td>
<td>Very high / rather weak position</td>
<td>Low / (very) weak position</td>
</tr>
</tbody>
</table>

Source: Adapted and extended from Gadiesh et al. (2007).
Note: MNC = multinational corporation. The segmentation was first developed for consumer markets but it can also be applied to B2B markets. The exemplary market share calculated with regard to the market for TV sets in China.
IBM’s revenues in China fell by 9% in the 3rd quarter 2013. Mark Loughridge, IBM’s CFO: “IBM had suffered “enormous reductions on a year-to-year basis in a geography we tend to see [high] growth rates.”

Markets are (on average) still growing (demand for IT-Services in China expected to surpass €20billion/$27billion).

Customers tend more and more to local suppliers (fast to market and to adopt to changing local customer preferences).

Services of western companies like IBM, HP or SAP have the following problems:

- Do not adopt to local markets – “just transport” their traditional business models to developing countries
- “Too much of everything”
- Too expensive
- Often perceived by locals as “overblown” or “over-engineered” solutions
- Arrogance


Source: Ernst, Dubiel & Fischer (2009), p. 32.
Eight years ago: Few innovators in Asia
Today: Asian firms in our home markets

Conquering western markets
- Indian Competitors
- Chinese Competitors

Expanding in emerging markets
- Copcat only
- Basic developments
- Innovation

National champion

Startup in home market

Market presence

Maturity of offering

Copycat only
Basic developments
Innovation

Mostly unknown

Source: Siemens AG

* Business activity since 2004  ** Was taken over by UTC in August 2009
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National champion
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Maturity of offering

Copycat only
Basic developments
Innovation

Indian Competitors
Chinese Competitors

2002
Eight years ago: Few innovators in Asia
Today: Asian firms in our home markets

Wandong
Baoding Tianwei
Hisense
Changchun
CRSC
Delta
Everlight
BHEL
Delta
Crompton Greaves
Baoding Tianwei

2010
Larsen & Toubro
Huawei
Crompton Greaves
ZTE

Source: Siemens AG

* Business activity since 2004  ** Was taken over by UTC in August 2009

www.whu.edu/tim
Segmentation and pricing: The Example of a Osram halogen lamp market segmentation (developed and emerging markets)

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Market price</th>
<th>Lifetime [hours]</th>
<th>Requirements</th>
<th>Realized offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>1.95 EUR</td>
<td>5,000</td>
<td>International standard, Energy efficient</td>
<td></td>
</tr>
<tr>
<td>M2</td>
<td>0.90 EUR</td>
<td>2,000</td>
<td>International standard</td>
<td></td>
</tr>
<tr>
<td>M3</td>
<td>0.50 EUR</td>
<td>1,500</td>
<td>Chinese standard</td>
<td></td>
</tr>
<tr>
<td>M4</td>
<td>0.20 EUR</td>
<td>1,000</td>
<td>No standard defined</td>
<td>No OSRAM presence yet</td>
</tr>
</tbody>
</table>

Source: Siemens
China increased R&D spending by 35.8% in 2013.

The biggest absolute gains were in North America.

R&D spending in ROW is going up too.

Japan reduced R&D expenditures.
Trend in patent applications for the top 5 regions

Patent applications for the top 10 patent offices in 2012