Are we still living in the **STONE AGE?**
DIAMONDS ARE FOREVER.....
STONES ARE FOR NEVER.....

This is what I understand as VALUE ADDITION
Dairy Value Addition: Pakistan in Perspective

International Seminar on Value Addition Concerns
March 18, 2011
National Institute of Dairy Science and Technology
University of Agriculture, Faisalabad

Syed Ibrar Hussain
CEO, SPECIALITIES
www.specialities.com.pk
• Milk is a white liquid comprising hundreds of thousands of moieties coexisting in an emulsion, suspension and true solution form.

• These moieties singly or in combination can be used to form thousands of new products.

• A product from cow can be:
  – < Rs. 50/ kg (Plain Raw Milk)
  – > Rs 288 million/ kg (Lactoferrin ~90 % Pure)
  – > Rs 877 million/ kg (Folate Binding Proteins)
    • Lactoferrin Concentration in milk (~1 kg/ 50000 liters)
      – Normal Milk  20 – 2100 µg/ ml
      – Mastitis Milk 44 – 3100 µg/ ml

• We choose..... To Add Value
Milk as a Dairy
As single source in human diet (infants)
Dairy value

Milk as a Material
Diversified product
Economic value
<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Pakistan</strong></td>
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<tr>
<td><strong>Pakistan Total Population</strong></td>
<td>180 million</td>
</tr>
<tr>
<td><strong>Avg. No. of People/ House</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>No. of Household</strong></td>
<td>36 million</td>
</tr>
<tr>
<td><strong>Avg. Household milk consumption</strong></td>
<td>1.52 liters/ day</td>
</tr>
<tr>
<td><strong>Rural Milk Consumption</strong></td>
<td>11.8 billion liters/ annum</td>
</tr>
<tr>
<td><strong>Rural Milk Consumption</strong></td>
<td>07.9 billion liters/ annum</td>
</tr>
<tr>
<td><strong>Total Milk in Trade</strong></td>
<td>19.7 billion liters/ annum</td>
</tr>
<tr>
<td><strong>Process Industry</strong></td>
<td>01.3 billion liters/ annum</td>
</tr>
<tr>
<td><strong>16.48 % of total dairy trade in urban areas</strong></td>
<td></td>
</tr>
<tr>
<td><strong>06.59 % of total dairy trade in Pakistan</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Informal Trade</strong></td>
<td>18.4 billion liters/ annum</td>
</tr>
<tr>
<td><strong>Karachi</strong></td>
<td>01.9 billion liters/ annum</td>
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</tr>
<tr>
<td>1</td>
<td><strong>Dairy Processing Sector in Pakistan</strong></td>
</tr>
<tr>
<td>2</td>
<td><strong>Challenges in the Sector</strong></td>
</tr>
<tr>
<td>3</td>
<td><strong>Opportunities &amp; Recommendations</strong></td>
</tr>
</tbody>
</table>
Informal 84% 16% Formal
• **Informal Sector**
  – Raw Milk
  – Milk Fat based Products
  – Fermented Milk Products
  – Concentrated Milk Products
  – Milk based sweetened products
  – Frozen Dairy Products
  **18.6 Billion liters milk/ annum**

• **Formal Sector**
  – UHT Milk & Non Dairy Products
  – Spray Dried Dairy Products
  – Dairy based Cereal Products
  – Fermented milk Products
  – Milk Fat based Products
  – Concentrated Milk Products
  – Frozen Dairy Products
  **1.1 Billion liters milk/ annum**
Major Avenues

• 18.4 billion liters has a potential of transformation and value addition for the ultimate benefit of consumer in terms of Health & Safety and immediate routes are:
  – Pasteurized Milk
  – Cheese
Farmer/ Entrepreneurial Value
Addition Expectation?

- Present Status
  - Product/ Investment
    - B2B
    - B2C

- Short/ Long term prospects
  - Products/ Investment
    - B2B
    - C2C
    - Specialized

- Additional CM of ? %
- Financial KPI’s
  - ROI ?
  - ROE?
  - ROA?
  - IRR?
<table>
<thead>
<tr>
<th><strong>Pakistan Population Est. 2010</strong></th>
<th>Mio</th>
<th>182.00</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urban Population</strong></td>
<td>%</td>
<td>32.52</td>
</tr>
<tr>
<td><strong>Urban Population</strong></td>
<td>Mio</td>
<td>59.19</td>
</tr>
<tr>
<td><strong>Average Household (Pakistan)</strong></td>
<td>People/ House</td>
<td>6.8</td>
</tr>
<tr>
<td><strong>Average Household (Urban)</strong></td>
<td>People/ House</td>
<td>7</td>
</tr>
<tr>
<td><strong>Towns with &gt; 0.25 mio Inhabitants</strong></td>
<td>No.</td>
<td>23</td>
</tr>
<tr>
<td><strong>Total Population of Towns with &gt; 0.25 mio</strong></td>
<td>Mio</td>
<td>41.26</td>
</tr>
<tr>
<td><strong>Annual Liquid Milk Requirement</strong></td>
<td>Mio Liters</td>
<td>14653</td>
</tr>
<tr>
<td>Description</td>
<td>Unit</td>
<td>Value</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>Daily Milk Requirement of Major Towns</td>
<td>Mio. Litres</td>
<td>8.50</td>
</tr>
<tr>
<td>Daily Existing Dairy Processing</td>
<td>Mio. Litres</td>
<td>3.00</td>
</tr>
<tr>
<td>Daily Proposed Dairy processing</td>
<td>Mio. Litres</td>
<td>5.50</td>
</tr>
<tr>
<td>No. of Processing Units</td>
<td>No.</td>
<td>275</td>
</tr>
<tr>
<td>Capex for each Unit</td>
<td>Mio. Rs</td>
<td>23.5</td>
</tr>
<tr>
<td>Total Capex</td>
<td>Mio. Rs</td>
<td>6466</td>
</tr>
<tr>
<td>Total Skilled HR Required</td>
<td>No.</td>
<td>16508</td>
</tr>
<tr>
<td>Processing Unit Capacity</td>
<td>Litres/ Day</td>
<td>20000</td>
</tr>
</tbody>
</table>
Raw Milk
Fat 6 %, SNF 8.9 %
Rs 35/ liter

Std. Homo, Past. Milk
Fat 3.5 %, SNF 8.9 %
Rs. 50/ liter

Fresh Cream
Fat 50 %, SNF 3.75 %
Rs. 160/ liter
<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>UNITS</th>
<th>DAILY</th>
<th>MONTHLY</th>
<th>YEARLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of Value Addition</td>
<td>Mio. Rs</td>
<td>100.12</td>
<td>3,003.61</td>
<td>36,043.33</td>
</tr>
<tr>
<td>Cost of Sales</td>
<td>Mio. Rs</td>
<td>31.92</td>
<td>957.46</td>
<td>11,489.49</td>
</tr>
<tr>
<td>Cost of Marketing</td>
<td>Mio. Rs</td>
<td>19.15</td>
<td>574.47</td>
<td>6,893.70</td>
</tr>
<tr>
<td>Cost of Logistics</td>
<td>Mio. Rs</td>
<td>12.11</td>
<td>363.17</td>
<td>4,358.08</td>
</tr>
<tr>
<td>Cost of losses</td>
<td>Mio. Rs</td>
<td>5.50</td>
<td>165.08</td>
<td>1,980.95</td>
</tr>
<tr>
<td>Cost of Packaging</td>
<td>Mio. Rs</td>
<td>14.86</td>
<td>445.71</td>
<td>5,348.56</td>
</tr>
<tr>
<td>Cost of Processing</td>
<td>Mio. Rs</td>
<td>9.71</td>
<td>291.36</td>
<td>3,496.37</td>
</tr>
<tr>
<td>SWB</td>
<td>Mio. Rs</td>
<td>6.88</td>
<td>206.35</td>
<td>2,476.18</td>
</tr>
<tr>
<td>Raw Milk Cost</td>
<td>Mio. Rs</td>
<td>192.59</td>
<td>5,777.76</td>
<td>69,333.14</td>
</tr>
<tr>
<td>TOTAL COST of GOODS MANUFACTURED</td>
<td>Mio. Rs</td>
<td>292.71</td>
<td>8,781.37</td>
<td>105,376.47</td>
</tr>
<tr>
<td>NSR (Past. Milk &amp; Cream)</td>
<td>Mio. Rs</td>
<td>319.15</td>
<td>9,574.58</td>
<td>114,894.92</td>
</tr>
<tr>
<td>Gross Margin</td>
<td>Mio. Rs</td>
<td>31.92</td>
<td>957.46</td>
<td>11,489.49</td>
</tr>
</tbody>
</table>
Industry Growth Drivers - Demand

Urbanisation, rise in disposable incomes and changing lifestyle and aspirations are leading to significant demand for processed Dairy...

- Increasing Urbanisation – Lifestyle and Aspirations
- Changing demographics – Rise in disposable incomes
- Organised Retail and Private Label Penetration
- Increasing Nuclear Families and Working Women
- Increasing spends on health Dairy
- Demand for Functional Dairy
Supportive Policy, in light of the significant employment and trade potential, to boost the quantity and quality of output in the sector is also driving growth in the sector...

- **Infrastructure Development**
  - Mega Dairy Farms
  - Integrated Cold Chain
  - Modernisation of Process

- **Technology Upgradation**
  - Grant of 25% of the cost of plant & machinery and technical civil (maximum of Rs 50 lacs in general areas and Rs 75 lacs in difficult areas)

- **Quality Control/ R&D**
  - Setting up a network of laboratories
  - Higher level of assistance to research institutes
  - Assistance for organising promotional activities
  - 50-100% subsidy to private companies/state governments, which set up quality testing laboratories

- **HR & Institutional Development**
  - Financial assistance to set up training centres
  - Establishment of NIFTEM
  - Strengthening of State Nodal Agencies
  - IT
1 Dairy Processing Sector in Pakistan

2 Challenges in the Sector

3 Opportunities & Recommendations
CHALLENGES IN THE SECTOR

CHALLENGE 1: PRODUCTIVITY ISSUES

Pakistan’s overall dairy productivity is still LOW!
## Challenges in the Sector

### Challenge 2: R&D

<table>
<thead>
<tr>
<th>Key Problems in Pakistani R&amp;D</th>
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<tbody>
<tr>
<td><strong>Commodity-centric R&amp;D</strong></td>
</tr>
<tr>
<td>Lack of a holistic approach involving a matrix of farm enterprises</td>
</tr>
<tr>
<td><strong>Compartmentalization of R&amp;D agencies</strong></td>
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<tr>
<td>Lack of effective bilateral flow of information amongst research,</td>
</tr>
<tr>
<td>extension, and implementation departments</td>
</tr>
<tr>
<td><strong>Poor validation and feedback mechanisms</strong></td>
</tr>
<tr>
<td>Lack of large-scale on-farm validation of techniques and feedback</td>
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<tr>
<td>thereon, leading to practically no scope for enhancement</td>
</tr>
</tbody>
</table>

A seven-step mechanism is required to set-up a research-development-technology transfer continuum involving all stakeholders:

1. **Problem identification and prioritization**
2. **Convergence of existing technologies to match the need**
3. **Generation of need-based viable technologies using the holistic farming system approach**
4. **On-farm assessment and evaluation**
5. **Feedback on the technologies**
6. **Refinement of technologies, if necessary**
7. **Ensuring timely availability of inputs**
The industry is in dire need of highly skilled/trained manpower across different levels to handle various operations.

- Emphasize Dairy safety in storage conditions
- Training in Warehousing and Distribution
- Managerial and Operational level HRD
- Dairy safety awareness
- Auditing and inspection skills
- Process development
- Institutional Development
- Focus on packaging techniques, storage and safe transportation
- Platform to make policy decisions
- Inclusion in academic curriculum
### Challenge 4: Supply Chain Hindrances

#### Necessity for a Strategic focus on Supply Chain in FPI

<table>
<thead>
<tr>
<th>Seasonality</th>
<th>Seasonal production Vs Year-round Processing Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perishability</td>
<td>Highly perishable nature of raw materials</td>
</tr>
<tr>
<td>Variability</td>
<td>Variable quality of raw materials due to cyclic variations and changing weather conditions</td>
</tr>
</tbody>
</table>

- This situation discourages processing units to reach optimum size and achieve economies of scale.
- Additionally, lack of consistent quality hinders small scale units to build brand equity for themselves in international and domestic markets.
Challenges in the Sector

Challenge 5: Low Adherence to Quality Standards

Increasing need for Dairy processors to adhere to quality standards for both domestic as well as export market

- Increasing Globalisation
- Stringent Safety Norms
- Rising Customer awareness on Quality and Health

- Lack of requisite controls across the agri-value chain—from farm inputs to storage of produce to Dairy processing techniques

- Poor compliance to requisite Dairy standards in export countries

- Absence of basic standardization and certification infrastructure
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OPPORTUNITIES & RECOMMENDATIONS

DAIRY PROCESSING SECTOR HAS STRONG SYNERGIES WITH THE INCLUSIVE GROWTH MANDATE OF THE GOVERNMENT AND ALSO PROVIDES A PLATFORM TO SIGNIFICANTLY TRANSFORM THE FACE OF RURAL PAKISTAN...

A developed Dairy Processing sector will help overcome the biggest challenges in front of Pakistan:

- Low farmer income and high subsidies
- High wastage along the value chain
- Poor hygiene and safety standards

Given the huge potential opportunity, players should consider the constraints as opportunities waiting to be exploited and make investments for the overall growth of the industry.
Opportunities

High domestic demand and supportive policy provides significant opportunities across the dairy processing value chain...

Key Opportunities

- Mega Dairy Parks
- Integrated Cold Chain
- Backward and Forward Integration
- Dairy Safety Management Systems
- Training Facilities
- B2B Sales
- Quality Control Labs
- Joint Research Facilities
- Customised Farm Equipment
RECOMMENDATIONS FOR THE DAIRY PROCESSING INDUSTRY IN PAKISTAN

- Promote Nutrition Dairy Products
- Processable variety of Products
- Support Backward Integration
- Increase Promotional Activities
- Market Access to farmers
- Investment in Hard/Soft Infrastructure
- Technology Upgradation
- Harmonisation of Taxes

A Dynamic Dairy Processing Industry