TOYOTA’S MANUFACTURING SUPPLY CHAIN

by

RICHARD B. VALDEZ
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1. Overview of Toyota Production Structure
2. Becoming a Toyota Supplier
3. Toyota Supply Chain: Philippine Setting
4. Key Factors for Suppliers
1) Toyota Production Structure

Manufacturing supply chain strategy adapts to changing structure of production networks.

- 52 Production Affiliates
- 7 Research & Design bases
- 175 Distributorships

Considerations:
- Production Expansion
- Cost Efficiency
- Investment Efficiency
- Core Competence Focus
- Control
- Flexibility

production bases | design and R&D bases
1) Toyota Production Structure

Vehicle production characterized by increasing regionalization --- matching demand and supply within the same region

<Sample Focus: Innovative International Multi-purpose Vehicle (IMV)>

5 vehicle types, 1 IMV platform

I, II, III – Hilux
IV – Fortuner
V – Innova

TSAM – Toyota South Africa Motors (Pty) Ltd.
TKM – Toyota Kirloskar Motor Pvt. Ltd.
TMMIN – P.T. Toyota Motor Manufacturing Indonesia
TMP – Toyota Motor Philippines Corp.
TMT – Toyota Motor Thailand Co. Ltd.
TASA – Toyota Argentina S.A.
1) Toyota Production Structure

Evolution of purchasing system --- promotion of “local purchasing”, i.e. produce/purchase in the country or region of vehicle production

<Sample Focus: Toyota Parts Complementation Scheme in ASEAN>

TKM – Toyota Kirloskar Motor
TMT – Toyota Motor Thailand
ASSB – Assembly Services, Sdn. Bhd.
TMP – Toyota Motor Philippines
TMV – Toyota Motor Vietnam
TMMIN – Toyota Motor Manufacturing Indonesia
Presentation Outline

1. Overview of Toyota Production Network
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4. Key Factors for Suppliers
## 2) Becoming a Toyota Supplier

Purchasing at Toyota takes place in accordance with the following basic policies:

<table>
<thead>
<tr>
<th></th>
<th>Fair competition based on open-door policy</th>
<th>Open to any and all suppliers regardless of nationality, size, or whether they have done business with Toyota before</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Mutual benefit based on mutual trust</td>
<td>Long-term relationships based on mutual trust fostered by close and wide-ranging communication with suppliers</td>
</tr>
<tr>
<td>3</td>
<td>Contributing to local economy through localization</td>
<td>Economic and industrial contribution in regions with Toyota market presence through purchasing of parts, materials, tools, equipment and others from local suppliers</td>
</tr>
</tbody>
</table>

Ref: Toyota Supplier CSR Guidelines (Dec 2012)
2) Becoming a Toyota Supplier

Supplier technical evaluation process

**TMP**

1. **Evaluation of New Supplier Capability**
   - General requirements
   - Design and development capability
   - Production engineering capability
   - Manufacturing capability
   - Quality control
   - Safety
   - Environment

**TMAP**

2. **Evaluation of New Supplier Capability**
3. **Propose to Designer**

**TMC**

4. **Final Evaluation/Approval**

- Suppliers are chosen on the basis of business considerations.
- Toyota evaluates the overall strengths of prospective suppliers.
2) Becoming a Toyota Supplier

<table>
<thead>
<tr>
<th>Category</th>
<th>Expectation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>Safe environment for people to carry out manufacturing without worry</td>
</tr>
<tr>
<td>Quality</td>
<td>Consistent high quality to maintain the excellent reputation of Toyota and enjoy the trust from customers</td>
</tr>
<tr>
<td>Delivery and Production</td>
<td>Flexible, error-free execution in preparation for production and delivery in a timely manner</td>
</tr>
<tr>
<td>Cost</td>
<td>Most competitive cost through innovative production technologies</td>
</tr>
<tr>
<td>Technological Capability</td>
<td>Grasp and address customer and social expectations in technologies for environmental protection, safety and comfort</td>
</tr>
</tbody>
</table>

Ref: Toyota Supplier CSR Guidelines (Dec 2012)
2) Becoming a Toyota Supplier

Toyota’s expectations from suppliers in the process of developing products and services

| Legal Compliance                      | • Compliance with applicable laws and regulations  |
|                                      | • Protection of intellectual property              |
|                                      | • Implementation of anti-corruption measures       |
| Human Rights/Labor                   | • Non-discrimination with regards to all aspects of employment |
|                                      | • Compliance with labor laws and regulations       |
|                                      | • Provision of safe and healthy working environment |
| Local/Global Community               | • Promote environmental preservation activities and improve environmental performance |
|                                      | • Responsible material procurement                 |
|                                      | • Social contribution                              |

Ref: Toyota Supplier CSR Guidelines (Dec 2012)
2) Becoming a Toyota Supplier

Toyota’s fundamental approach in supplier relations

<table>
<thead>
<tr>
<th>Supplier Selection</th>
<th>Supplier Collaboration</th>
<th>Supplier Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Evaluating supplier strength</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Establishing suppliers commitment to Toyota</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Leveraging expertise and critical capabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Optimizing supplier interaction from design to production</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Knowledge sharing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Performance monitoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Quality audits</td>
<td></td>
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</tr>
</tbody>
</table>
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Approximately 60% of Toyota PH local supplier base are SMEs.
Only 18 Toyota PH local suppliers are exporting; 2 of which are SMEs.

Note: Indirect exporters cover only suppliers exporting thru TMP
TMP shares its successful strategies with suppliers through the Toyota Suppliers Club (TSC).

### TSC Activities

Improving efficiency and productivity throughout the local Toyota value stream:

- Toyota production System (TPS) activities
- Kaizen and QC Tools seminars
- Cost and Quality seminars
- Safety seminars
- Learning sessions on human resource development and industrial relations
3) Toyota Philippines Supply Chain

Effects of knowledge-sharing at Toyota: Creating joint value

<TPS Examples: Plastic Injection Parts>

<table>
<thead>
<tr>
<th>Step</th>
<th>Kaizen Sheet</th>
<th>Effects</th>
</tr>
</thead>
</table>
| 1    | **Process**: Injected parts stock  
**Kaizen Theme**: Reduction of stock lead time | **Model A** – 900 sets  
**Model B** – 1000 sets  
**Problem**: Too high inventory  
**Kaizen**: Reduction of inventory through Kanban implementation  
**Result**: Stock leadtime reduced from **15 days to 6 days** (Bumper stacking height reduced from 3 layers to 2 layers) |
| 2    | **Process**: Trimming, flaming, and washing  
**Kaizen Theme**: Increased in Operational Availability | **Work in process** = 15 pieces  
1125 seconds  
**Problem**: Part rejection due to scratches that needs reworking  
**Kaizen**: Provide smaller WIP table to accommodate single piece of bumper  
**Result**: Reworked process was eliminated, increased by 0.7 Operational Availability and process lead-time reduced by 450 sec. |
3) Toyota Philippines Supply Chain

Effects of knowledge-sharing at Toyota: Creating joint value

<TPS Examples: Press Parts>

1) SHIPPING
Kaizen Theme: LEAD TIME REDUCTION

**BEFORE**

LONG SHOPPING LEAD TIME DUE TO NO PROPER LOCATION AND NO STANDARD TRANSFER OF PARTS TO PANORAMA.

**AFTER**

IMPLEMENTATION OF STAGING CONTROL BOARD AND STANDARD LOCATION OF PARTS

MERIT: REDUCE SHOPPING LEAD TIME BY 50% (From 0.2 to 0.1 Day).

2) PRODUCTION (MODEL LINE)
Kaizen Theme: PRODUCTIVITY IMPROVEMENT

**BEFORE**

LONG CYCLE TIME DUE TO BATCH PRODUCTION (Transfer of Parts)

**AFTER**

PROVISION OF SLIDE CHUTTER (Continuous flow of Parts)

MERIT: REDUCE CYCLE TIME (From 11 to 8.8 sec/pc) per Process. INCREASE PRODUCTIVITY BY 13.4%. (From 359 to 407 GSPH)
3) Toyota Philippines Supply Chain

Enhancing the value chain of parts makers through collaborative partnership with Government

<table>
<thead>
<tr>
<th>PARTNERS</th>
<th>FOCUS IMPROVEMENTS</th>
<th>KEY RESULT AREAS</th>
</tr>
</thead>
</table>
| ECOP/Institute for Productivity and Competitiveness | Operations Management  
• 5S or Good Housekeeping  
• Production Process Flow  
• Plant Layout  
• Human Resource Development | Reduce cost of doing business  
Improve quality  
Support Customer-Supplier relationship  
Enhance Employer-Employee relationship  
Increase flexibility  
Punctual delivery |
| DTI/Center for Industrial Competitiveness | | |
| DOST/Technology Applications Promotion Institute | | |

<EBESE-Toyota Cluster development process>

Selection → Business Diagnosis → Managers/Supervisor Training → Workers Training → Plan & Implement → Monitor & Evaluate → Project Turnover
3) Toyota Philippines Supply Chain

From 2005~2013, total of 98 suppliers have benefited from the EBESE-Toyota Cluster Development Program.

98 Suppliers

<table>
<thead>
<tr>
<th>Tier</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>26</td>
<td>27%</td>
</tr>
<tr>
<td>Tier 2</td>
<td>65</td>
<td>66%</td>
</tr>
<tr>
<td>Tier 3</td>
<td>7</td>
<td>7%</td>
</tr>
</tbody>
</table>

<Program Benefits>

Significant impact on quality, productivity improvement, efficiency, cost competitiveness and waste reduction.
3) Toyota Philippines Supply Chain

Advantages of being a Toyota Supplier: Global/ regional integration through the Toyota complementation scheme

- Domestic Suppliers
- Toyota Motor PH
- Toyota Motor AP
- Toyota Affiliates

11 INDIRECT Export Suppliers
2 SMEs
9 Large Ent.
$182 Million 2015 Export Sales

Locations:
- Argentina
- Australia
- Brazil
- Egypt
- India
- Indonesia
- Kazakhstan
- Malaysia
- Pakistan
- South Africa
- Thailand
- Taiwan
- Vietnam

Toyota moving forward
3) Toyota Philippines Supply Chain

Advantages of being a Toyota Supplier: Integration by indirect exports through Toyota Tier 1 Export Manufacturers

- Tier 2/ Tier 3 Suppliers
- Tier 1 Supplier
- Supplier’s Regional/Country Office
- Toyota Affiliates

- 14 DIRECT Export Suppliers
- > 20 Tier 2 SME suppliers
- $820 Million 2015 Export Sales
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## 4) Key Factors for Toyota Suppliers

| Suppliers must identify themselves as part of an interdependent economic network. | ✓ Cooperate with OEM initiatives to improve supplier performance  
✓ Putting value in Toyota-Supplier relations |
<table>
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<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply chain management is about utilizing the competitive advantage of global/ regional sourcing</td>
<td>✓ Ability to cope with OEM requirements in terms of productivity, quality, engineering, cost efficiency and delivery</td>
</tr>
</tbody>
</table>
| Increasing globalization and regionalization are redesigning production and supply networks | ✓ Ability to cope with supply chain transformation  
✓ Understand the continuous need to upgrade competencies |
4) Key Factors for PH Suppliers

Common factors affecting PH SME parts makers competitiveness

- Lack of design capability
- Lack of research and development
- Lack of testing facilities
- No available local raw materials

Some considerations for suppliers/ policymakers

- Develop research & development, design and testing capability of SMEs
  - Pre-requisites to becoming direct OEM supplier or Tier 1 supplier.
- Suppliers should exploit technology and innovation to gain competitive advantage.
  - When technological capacity is low and resources are limited for in-house R&D, firms should use other channels to acquire technology (e.g. Joint Venture, Technical Agreements)
- Establishment of shared service facilities (including testing facilities) for auto parts
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