Information Service Industry in Japan

Purpose: Information
Submitted by: Japan
The APEC Symposium on Improving Market Access for ICT Outsource SMEs
— Information Service Industry in Japan —

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(Vietnamese Academy of Science & Technology)

Topics

I. Information Service Industry in Japan

II. Offshore Software Development

III. Embedded Software

2006 Information Service Industry Statistics

<table>
<thead>
<tr>
<th>Industry</th>
<th>Businesses</th>
<th>Employees</th>
<th>Annual Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Total</td>
<td>(JPY 100 million)</td>
</tr>
<tr>
<td>Software</td>
<td>10,789</td>
<td>567,498</td>
<td>137,517</td>
</tr>
<tr>
<td></td>
<td>(%) 66.3</td>
<td>(%) 69.1</td>
<td></td>
</tr>
<tr>
<td>Information-processing &amp; Information-service</td>
<td>5,473</td>
<td>253,225</td>
<td>51,435</td>
</tr>
<tr>
<td></td>
<td>(%) 33.7</td>
<td>(%) 30.9</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16,262</td>
<td>820,723</td>
<td>188,952</td>
</tr>
</tbody>
</table>

Source: Ministry of Economy, Trade and Industry “2006 Survey of Selected Service Industries”
### 2006 Information Service Industry Sales (by Product Type)

- **Customized software**: 47.9%
- **DB services**: 1.3%
- **System management outsourcing**: 6.6%
- **Surveys**: 4.3%
- **Software product**: 9.2%
- **Information-processing**: 7.6%
- **Other**: 23.1%

*Source: Ministry of Economy, Trade and Industry “2006 Survey of Selected Service Industries”*

### Japan Software Exports

(Unit: JPY million)

- **USA**: 16,000
- **Holland**: 4,000
- **UK**: 8,000
- **Taiwan**: 2,000
- **Germany**: 1,000
- **China**: 1,000
- **France**: 1,000
- **South Korea**: 1,000

*Source: JISA, JEITA, JPSA “2005 Survey of Overseas Transactions in the Field of Computer Software & Employment of Foreigners in Japan”*

### Japan Software Imports

(Unit: JPY million)

- **USA**: 350,000
- **China**: 300,000
- **India**: 250,000
- **UK**: 200,000
- **Australia**: 150,000
- **Taiwan**: 100,000
- **Israel**: 50,000
- **South Korea**: 50,000

*Source: JISA, JEITA, JPSA “2005 Survey of Overseas Transactions in the Field of Computer Software & Employment of Foreigners in Japan”*

### Ratio of Engineering Fee Payment / Receipt (Japan’s Overseas Transactions)

<table>
<thead>
<tr>
<th>Industry</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>All industries</td>
<td>0.37</td>
<td>0.32</td>
<td>0.35</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>0.33</td>
<td>0.29</td>
<td>0.30</td>
</tr>
<tr>
<td>Pharmaceutical</td>
<td>0.27</td>
<td>0.18</td>
<td>0.23</td>
</tr>
<tr>
<td>Chemical</td>
<td>0.51</td>
<td>0.48</td>
<td>0.71</td>
</tr>
<tr>
<td>Telecom equipment</td>
<td>1.04</td>
<td>1.01</td>
<td>1.25</td>
</tr>
<tr>
<td>Electronics parts/devices</td>
<td>0.99</td>
<td>0.65</td>
<td>0.75</td>
</tr>
<tr>
<td>Transport machinery</td>
<td>0.03</td>
<td>0.02</td>
<td>0.03</td>
</tr>
<tr>
<td>Auto</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Software/Information-processing</td>
<td>14.89</td>
<td>10.31</td>
<td>15.80</td>
</tr>
</tbody>
</table>

Japanese Information Service Industry Characteristics

- Focused on software development (55.5% of total sales)
  - Customized software: 47.9%
  - Software product: 7.6%

- Closed nature of the market
  - The majority of transactions are finalized domestically
    (most exports target Japanese-owned companies overseas)

- Inadequate software development competency and international competitive strength
  - 2004 imports were 11.4 times exports
    - Imports: JPY 364.6 billion
    - Exports: JPY 32.0 billion
  - 2006 ratio of overseas engineering fee payment/receipt (overseas transactions)
    - All industries: 0.35
    - Software/Information-processing: 15.80

Offshore Software Development

Definition:
The outsourcing of software development to an overseas subsidiary or other overseas company

Objectives:
① Reduce development costs
② Compensate for inadequate human resources
③ In the case of China: to enter the Chinese market

Offshore Software Developers for Which Japanese Companies Hold High Expectations

<table>
<thead>
<tr>
<th>Country or region</th>
<th>Companies that outsourced overseas</th>
<th>Companies considering using outsource overseas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2003 (58 companies)</td>
<td>2004 (204 companies)</td>
</tr>
<tr>
<td></td>
<td>2003 (193 companies)</td>
<td>2004 (251 companies)</td>
</tr>
<tr>
<td>China</td>
<td>48</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>127</td>
<td>120</td>
</tr>
<tr>
<td>India</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>61</td>
<td>56</td>
</tr>
<tr>
<td>South Korea</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>53</td>
<td>53</td>
</tr>
<tr>
<td>Vietnam</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>Taiwan</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>14</td>
</tr>
<tr>
<td>USA</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Thailand</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Singapore</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Philippines</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>No response</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>57</td>
<td>45</td>
</tr>
</tbody>
</table>

Source: JISA, JEITA, JPSA

"2004 Survey of Overseas Transactions in the Field of Computer Software & Employment of Foreigners in Japan"
Offshore Software Developers Utilized by Japanese Companies

<table>
<thead>
<tr>
<th>Country or region</th>
<th>2002 (58 companies)</th>
<th>2003 (58 companies)</th>
<th>2004 (77 companies)</th>
<th>2004 compared with 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>9,833</td>
<td>26,280</td>
<td>33,241</td>
<td>126.5%</td>
</tr>
<tr>
<td>USA</td>
<td>3,260</td>
<td>4,988</td>
<td>5,147</td>
<td>103.2%</td>
</tr>
<tr>
<td>India</td>
<td>1,908</td>
<td>6,312</td>
<td>4,255</td>
<td>67.4%</td>
</tr>
<tr>
<td>Australia</td>
<td>0</td>
<td>2,626</td>
<td>3,133</td>
<td>119.3%</td>
</tr>
<tr>
<td>UK</td>
<td>20</td>
<td>1,827</td>
<td>2,126</td>
<td>116.4%</td>
</tr>
<tr>
<td>Philippines</td>
<td>1,864</td>
<td>2,494</td>
<td>2,117</td>
<td>84.9%</td>
</tr>
<tr>
<td>South Korea</td>
<td>1,952</td>
<td>1,871</td>
<td>1,415</td>
<td>75.6%</td>
</tr>
<tr>
<td>France</td>
<td>0</td>
<td>834</td>
<td>548</td>
<td>65.7%</td>
</tr>
<tr>
<td>Canada</td>
<td>496</td>
<td>616</td>
<td>292</td>
<td>47.4%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>30</td>
<td>30</td>
<td>216</td>
<td>720.0%</td>
</tr>
<tr>
<td>Other</td>
<td>888</td>
<td>1,082</td>
<td>237</td>
<td>21.9%</td>
</tr>
<tr>
<td>Total</td>
<td>20,251</td>
<td>48,960</td>
<td>52,727</td>
<td>107.7%</td>
</tr>
</tbody>
</table>

Source: JISA, JEITA, JPSA

“2005 Survey of Overseas Transactions in the Field of Computer Software & Employment of Foreigners in Japan”

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Comparison of China, India, the Philippines & Vietnam

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>JPY 8.7 trillion</td>
<td>JPY 3.5 trillion</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>JPY 3.5 trillion</td>
<td>JPY 150 billion</td>
<td></td>
</tr>
<tr>
<td>Philippines</td>
<td>JPY 150 billion</td>
<td>JPY 1050 billion</td>
<td></td>
</tr>
<tr>
<td>Vietnam</td>
<td>JPY 38.7 billion</td>
<td>JPY 11.2 billion</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>Export Ratio to Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>60%</td>
</tr>
<tr>
<td>India</td>
<td>30%</td>
</tr>
<tr>
<td>Philippines</td>
<td>40%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>10%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>Software engineers</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>400,000</td>
</tr>
<tr>
<td>India</td>
<td>1,300,000</td>
</tr>
<tr>
<td>Philippines</td>
<td>380,000</td>
</tr>
<tr>
<td>Vietnam</td>
<td>35,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>No. of IT-related graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>340,000</td>
</tr>
<tr>
<td>India</td>
<td>280,000 (IT) 500,000 (Engineering)</td>
</tr>
<tr>
<td>Philippines</td>
<td>80,000</td>
</tr>
<tr>
<td>Vietnam</td>
<td>10,000 (every year)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>Monthly salary (middle engineers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>US$120-600</td>
</tr>
<tr>
<td>Vietnam</td>
<td>US$170-360</td>
</tr>
</tbody>
</table>

Source: CICC “Asia IT Report 2008 – Comparative Study on IT Status in Asia”

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Offshore Software Development-related Issues Attributable to Japanese Companies

① Japan-specific business practices
   - Closed nature of the market
   - Multilayered subcontractor structure
   - Contract ambiguity

② Japanese-style development methods
   - Ambiguity of required specifications
   - Frequent specification changes

③ Communication
   - Difficulty communicating in foreign languages

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Problems Related to Japanese Development Methods

- Ambiguity of required specs
- Frequent spec modifications

Development Processes

Schedule becomes tight

Specifications are continually changed but short lead-times are still required.

Impossible to secure man-hours required for design revisions, document updates, and testing
Offshore Software Development-related Issues Attributable to Offshore Companies

① Confidential information leaks
   - Sense of loyalty is extremely weak
   - Employee turnover rate is extremely high

② Internal training
   - No sharing of technical skills

③ Development environment
   - Power sources, networks, and other elements are unstable
   - Development tools are inadequate

What Is a Bridge SE?

Definition:
A Bridge SE works at the subcontractor’s location and serves as a liaison between the contractor and the subcontractor in an effort to effectively facilitate the project.

Required skills:
① SE (System Engineer) technical skills
② Language skills (excellent Japanese-language skills), a superb awareness of cultural and business practice differences, and expert knowledge of project development
③ PM (Project Manager) skills
   - Understanding of contractual terms
   - Schedule management
   - Risk management
Outsourcing by Omron Software Co., Ltd

Purpose: Information
Submitted by: Japan

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Hanoi, Vietnam
27–29 October 2008
1. Company Profile
2. Summary of Outsourcing
3. Establishing Outsource Policy
4. Outsourcing Style
5. General System of Maintaining Quality
6. Issues of Overseas Outsourcing
7. Expectations of Overseas Contractors

Omron Software, a member of Omron Group, has an edge in software technology. SSB company provides value of security, safety, and convenience to social infrastructures in Japan.
**OSK Group: Overview and Organization**

**Industrial Solution Business Division**
- Omron Software Co., Ltd.
- Mobile Solution Business Division
- Supply Chain Service Division
- Planning Office
- Internal Control Promotion Office
- Quality Assurance Department
- Overseas Commission Promotion Project
- Social System Solution Division
  - SSB * Business Development Dept.
  - Financial System Business Dept.
- Strategy & Planning Office

**Mobile Solution Business Division**
- Providing comfortable user interfaces for mobile appliances through natural language processing and embedded technologies

**Supply Chain Service Division**
- Planning Office
- Internal Control Promotion Office
- Quality Assurance Department
- Overseas Commission Promotion Project
- Social System Solution Division
  - SSB * Business Development Dept.
  - Financial System Business Dept.
- Strategy & Planning Office
Summary of Outsourcing

- **Size:**
  - FY2007
  - Domestic outsourcing: about 3,300 man-months
  - Overseas outsourcing: about 700 man-months

- **Outsourcing contents:**
  - Software development

- **Outsourcing processes:**

<table>
<thead>
<tr>
<th>Development Process</th>
<th>Domestic</th>
<th>Overseas</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD: Concept design</td>
<td>○</td>
<td>×</td>
</tr>
<tr>
<td>FD: Function design</td>
<td>○</td>
<td>△</td>
</tr>
<tr>
<td>SD: Structure design</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>MD: Module design</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>PG: Programming</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>MB: Monolithic debug</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>SB: Synthesis debug</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>FB: Function debug</td>
<td>○</td>
<td>△</td>
</tr>
<tr>
<td>TG: Testing</td>
<td>○</td>
<td>×</td>
</tr>
</tbody>
</table>

Mission

- Support our overseas developments
- Establish internal procedures for overseas developments
- Plan to improve and maintain quality of overseas developments

Establishing Outsource Policy

- **Policy**
  - Purpose of outsourcing
  - Types of outsourcing
  - Specific Processes to outsource
  - Outsourcing company
  - Continuously Outsourcing
### Outsourcing Style

**S1: Direct**
- Most efficient but difficult to manage outsourcing companies
- OSK Spec Products

**S2: Residing**
- Efficient but depends on skills of BSE
- OSK Spec BSE Products

**S3: Collaboration**
- Free from overseas business practices and culture
- OSK Spec SE Products

### General Systems of Maintaining Quality

- **Plan**
- **Do**
- **Check**
- **Act**
- **Implementation**
- **Data collected**

#### Quality
- **Software Product Quality**
- **Management Quality**
- **Process Quality**

#### Analysis
- Analyzing relevant data
- Identifying issues
- Knowledge sharing

#### Results of quality-data
- Status-data
- Results of quality-data

#### Integration
- Resource assign data
- Cost-data (result)

#### Integration
- Development
data
- Assessment
data

### Issues of Overseas Outsourcing

- **Quality**
  - Different concepts of quality
  - Securing quality when specifications are constantly changed
  - Deterioration of quality due to insufficient reviewing

- **Different interpretation of specifications**
  - Lack of communication
  - Lack of domain knowledge/understanding

- **Cost performance**
  - Effect of cost reduction on the total cost

### Expectations of Overseas Contractors

- **Quality**
  - High quality awareness
  - Understanding Japanese quality concept
  - Continuing efforts for quality improvement
  - Quality improvement within the organization

- **Delivery**
  - Understanding Japanese delivery concept
  - The delivery date never changes, because various works after delivery are already planned.

- **Maintaining Cost / Performance Excellence**
  - Supplying excellent performance and cost efficiency
  - Employing and training excellent human resources more aggressively

- **Management of security**
  - Maintaining confidentiality and customer information privacy

- **Problem-Identifying and Solving Skills**
  - Being proactive in finding and solving problems independently