Korea Mobile Market Trend for Convergence & Ubiquitous Communication

2004. 03. 04.

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I. Mobile Market Situation

Mobile Market Shares In Korea

Wireless & Wired Penetration Rate

Major Asia Nations Penetration Rate

1. SK Telecom
   - Subscribers: 18.3 Millions
   - ARPU: U$38 (Data $6 included)

2. Other Players
   - Subscribers: 15.2 Millions
   - ARPU: U$32

- Taiwan: 90.6 %
- Hong Kong: 83.1 %
- Singapore: 71.6 %
- Japan: 50.1 %
  * Source: Global Mobile (Year 2001)

- Korea Wireless Market: 71 % (Yr. 2003)
I. Mobile Market Situation

Data Market Growth (Source: SKT Data)
(Current Data APPU Ratio: 15% vs. Yr. 2002: 10%)

Global Telecommunication Unification
- Global Roaming: CDMA 13 nations,
- GSM-CDMA Inter Standard Roaming 44 nations
(Source: SKT Data Yr. 2003)

Data Service Expansion (Multimedia etc.)
(Current Throughput: Avg. 600kbps)

Paradigm Shift of Technology & Industry
(Company & Company → Industry Integration)
1. Mobile Market Situation

Technology Evolution

<table>
<thead>
<tr>
<th>Year</th>
<th>Mobile Access</th>
<th>Transmission Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>Low</td>
<td>(Voice)</td>
</tr>
<tr>
<td>2000</td>
<td>High</td>
<td>(Data)</td>
</tr>
<tr>
<td>2005</td>
<td>Low</td>
<td>(Image/Graphic)</td>
</tr>
<tr>
<td>2010</td>
<td>High</td>
<td>(Moving Picture/Digital TV)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(High Quality Video Streaming/Multimedia)</td>
</tr>
</tbody>
</table>

- **2G/2.5G**: Cellular/PCS
- **WLL**: 2.4 GHz W-LAN
- **3G**: IMT-2000 Service
- **3.5G**: IMT-2000 Improvement
- **5 GHz W-LAN**: B-WLL, 802.16
- **2-11 GHz W-Broadband**: UWB
- **4G**: Very High Speed Multimedia Service

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I. Mobile Market Situation

- Total Telecom. Market Volume (Yr. ’01)
  - Accounting for U$18 Billion
  - The 9th ranks among OECD 24 nations

<table>
<thead>
<tr>
<th>Region</th>
<th>Market Volume (Yr. ’01)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>302.8</td>
</tr>
<tr>
<td>Japan</td>
<td>118</td>
</tr>
<tr>
<td>U.K</td>
<td>66.2</td>
</tr>
<tr>
<td>Aus.</td>
<td>13.4</td>
</tr>
<tr>
<td>Korea</td>
<td>18</td>
</tr>
<tr>
<td>OECD Avg.</td>
<td>66.2</td>
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</table>

- Mobile Market Sales Revenue (Yr.’01)

<table>
<thead>
<tr>
<th>Region</th>
<th>Mobile Market Sales Revenue (Yr. ’01)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>69</td>
</tr>
<tr>
<td>Japan</td>
<td>68.9</td>
</tr>
<tr>
<td>U.K</td>
<td>11.9</td>
</tr>
<tr>
<td>Aus.</td>
<td>3.2</td>
</tr>
<tr>
<td>Korea</td>
<td>10.8</td>
</tr>
<tr>
<td>OECD Avg.</td>
<td>10.3</td>
</tr>
</tbody>
</table>

- Wired/Mobile Subscribers in 100 People Basis (Yr ’02)
  - 100 Unit Subscribers of the Population:
    - Wired Line-the 21st ranks,
    - Mobile-the 18th ranks

<table>
<thead>
<tr>
<th>Region</th>
<th>Wired/Mobile Subscribers (Yr ’02)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>114</td>
</tr>
<tr>
<td>Japan</td>
<td>129</td>
</tr>
<tr>
<td>U.K</td>
<td>129</td>
</tr>
<tr>
<td>Aus.</td>
<td>118</td>
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<tr>
<td>Korea</td>
<td>117</td>
</tr>
<tr>
<td>OECD Avg.</td>
<td>130</td>
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</table>

- Internet Users (Yr. ’02)

<table>
<thead>
<tr>
<th>Region</th>
<th>Internet Users (Yr. ’02)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>155</td>
</tr>
<tr>
<td>Japan</td>
<td>57</td>
</tr>
<tr>
<td>U.K</td>
<td>24</td>
</tr>
<tr>
<td>Aus.</td>
<td>8</td>
</tr>
<tr>
<td>Korea</td>
<td>26</td>
</tr>
<tr>
<td>OECD Avg.</td>
<td>16</td>
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</table>
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1. Mobile Market Situation

II. Market Driven Factors
- Customer Segmentation
- Segmentation Brands Power
- Wireless Data Market Growth

III. Market Paradigm Shift
II. Market Driven Factors

Customer Segmentation

Segment 1
Non-Mobile
Medium Usage

Segment 2
Old Generation
Mobile Biz. Person

Segment 3
Segment 6
Work & Family
Pleasure Phone

Segment 4
College/
Trainee

Segment 5
Happy Hour

Segment 7
New Generation

Segment 8
Eventual Phone

Segment 9

• Overall High Usage / Weekday Pattern
• Worker Weekday Pattern Saturday Daylight Pattern
• High Proportional Usage in High Rate
• High International Usage
• High Mobility / High Sphere
• Medium WAP Usage/ High Voice Mail/VAS Utilization

• Overall Medium Usage
• Work_Driven Weekday Pattern
• Night_Life Saturday Pattern
• High Usage in High Rate Period
• Low Mobility
• Small Sphere

• Weekday Intra_week Pattern
• Saturday Night-life Pattern
• Sunday Night-life Pattern
• Overall High Usage
• High Proportional Usage in Low Rate
• High Proportional 011 Call
• High Proportional Mobile Call Usage
• Very Long Call
• Medium Sphere
• High Area Concentration
• Medium Mobility
• High WAP/SMS Usage
• High Voice Mail Utilization
• Age (10's & Early 20's)

• Very Similar to Segment 4
Except
• Weekend Pattern
• Longest Call
• Age (10's & Early 20's)

• Weekday(75%), Weekend(25%)
• Weekday : 9 to 5 Working Pattern
• Saturday Daylight Activity Pattern
• Overall Medium Usage
• High Proportional Usage in High Rate
• Medium WAP Usage
• Medium SMS Usage

• Overall Very Low Usage
• Overall Very High CV
• Very High Concentration
• Very Low Mobility

• Weekday Night Life Pattern
(No worker Pattern)
• Saturday Daylight Activity Pattern
• Overall Medium Usage
• Low Mobility / Small Sphere
• High Concentration in Numbers
• High Proportional WAP Minutes
• Low Percentage of Using VAS
• Low Call Forwarding Utilization
• Low Call Waiting Utilization
• Age (Late 20s and 30s)
Segment Brands & Target Marketing Since 1999

Segment Brands Introduction

- During 4 yrs. 10 of Segment Brands were launched in Korea mobile market

Segment Brand Performance

<table>
<thead>
<tr>
<th>Young Target Segment M/S Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Feb. 99</strong></td>
</tr>
<tr>
<td><strong>79.0%</strong></td>
</tr>
<tr>
<td><strong>42.4%</strong></td>
</tr>
</tbody>
</table>

Young Generation Subscribers’ Demand & Satisfaction

[Diagram showing brand launches and performance metrics]

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II. Market Driven Factors

- Newly Emerging Wireless Data Market In Korea: New Demands? : Data

1. Seamless SVC Demand Increase (Ubiquitous Environment)
   - Continuous Demanding Unlimited Communication & Information Needs

   Any Time  Any Device  Any Place

   One Market, One Platform

   High Mobility, High Bandwidth Upscale Service Needs

2. Biz Convergence as a Driving Force In The Market
   - Telecom., Broadcasting, Finance, and Sales Channel are being reformed and closely integrated as a new value chain

3. Data Drive Telecommunication Service
   - Moving From Voice To Data

   Total Domestic Market Size
   - Fixed data: 13% (2000: 7%, 2005: 21%)
   - Mobile data: 39% (2000: 30%, 2005: 30%)
   - Fixed voice: 46% (2000: 42%, 2005: 30%)
   - Mobile voice: 2% (2000: 7%, 2005: 30%)

   2000 2005

   Total Domestic Market Size U$21 Billion

   Total Domestic Market Size U$34 Billion
III. Market Paradigm Shift

- Industrial Convergence by Various Customers’ Needs, Technology Infra Development, and Government Policy & Support

Wired Life Style (Voice Driven Market)

Wireless Life Style (Value Driven Communication)
III. Market Paradigm Shift

Various Service Demands

Communication

Various Communication Service

Mobile Information Service
- Artificial Intelligence Service
- Information Multicasting
- UMS, Audio/Graphic/Video Mail
- Location Service: Safety Service, Smart Yellow Page
- VMT Service (Information Car Navigation, etc.)

E-Commerce Service (B to C, C to C)
- Commerce Portal & Commerce Gateway
- Electronic Money/Cyber Cash, Security
- Virtual Shopping, Cyber Finance (Banking, Stocks, Action, Insurance, etc.)
- Voice/Digital Writer / Biometrics Application Service

Entertainment • Education Service
- Virtual Campus, Virtual Studio, e-Book, Network Library
- Internet Broadcasting, e-Music, MOD, VOD, Network Game, Multimedia Kiosk

Home Networking, Regional Networking
- Home Networking / Remote Control
- Home Care, Tele Medicine
III. Market Paradigm Shift

Through Wired & Wireless Market Synergy Based on High Speed Infra, Customers Will Be Satisfied and Enjoy End-Benefit In Real Time.
III. Market Paradigm Shift

Providing Very High Speed Multimedia Services

Voice

Mobile

Data

Multimedia

1G AMPS(1984)

Voice Focus

Low Speed’s Data
9.6kbps ~ 64kbps

2G CDMA(1996)

Telematics

Phone Decoration,
Bell Sounds Download

SMS Messaging

Person-to-person

Person-to-machines

Person-to-machines

VOD, Video Streaming

LBS Application

Telematics

DAB/DVB

Video Telephony

Mobile TV

3D Game

Remote Medical/Nursing

Video Conferencing

High Function Telematics

Virtual Telecommunication

Sensing

3G 1xEV-DO(2002)

Multimedia

Forward 2.4 Mbps
Reverse 307kbps
Average 600kbps

4G WCDMA(2003)

Multimedia

384 Kbps

~ 2 Mbps

Average 20Mbps

Seamless Service

Ubiquitous

Max 100Mbps

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III. Market Paradigm Shift

Newly Driven Future Market

Future Market Movement By Mobile Centered Convergence Environment

Expansion of Other Industries

- Telecom & Other Biz
- Converged Services

Converged Communication Biz.

Future Exotic Market

- Home
- Office
- Factory
- Education
- Entertainment
- Game

Industry Convergence Technology

- Various Comm. Methodology’s Integration
- Multifunction Terminal
- Artificial Intelligence and Wearable Computing, etc.

Initial convergence

- Customer Needs
- Digitalization

Customer Context

State-of-the-Art

Network

Mobile + Internet Access
- Smart Phone: Handsets + PDA

Content

Computing & Electronics

Content

Computing

Communications

New Services

Mutual Interaction

- Customer Needs
- Digitalization

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