The socio-Economic Impacts of mHealth

Ola Jo Tandre
Group Corporate Responsibility
Washington – March 2013
Among the world’s largest mobile operators

148 million mobile subscribers

Telenor - Norway
Telenor’s wholly owned Norwegian mobile operation is the country’s leading telecommunications operator.

Telenor - Sweden
Telenor’s wholly owned subsidiary, Telenor Sweden, is Sweden’s third largest mobile operator.

Telenor - Denmark
Telenor’s wholly owned subsidiary, Telenor Denmark, is Denmark’s second largest mobile operator.

Telenor - Hungary
Telenor’s wholly owned subsidiary, Telenor Hungary, is the country’s second largest mobile operator.

Telenor - Serbia
Telenor’s wholly owned subsidiary, Telenor Serbia, is the country’s second largest mobile operator.

Telenor - Montenegro
Telenor’s wholly owned subsidiary, Telenor Montenegro, is the country’s largest mobile operator.

Telenor - Pakistan
Telenor’s wholly owned subsidiary, Telenor Pakistan, is the second largest mobile operator in Pakistan.

Uninor - India
Telenor holds a 67.25 per cent ownership interest in Indian greenfield mobile operator Uninor. The company launched its services in December 2009.

Grameenphone - Bangladesh
Telenor holds a 55.6 per cent ownership interest in Grameenphone, the largest mobile operator in Bangladesh. Grameenphone is listed on the Dhaka Stock Exchange (DSE) Ltd. and the Chittagong Stock Exchange (CSE) Ltd.

dtac - Thailand
Telenor’s economic exposure in Thai mobile operator dtac is 65.5 per cent. Dtac is the second largest mobile operator in Thailand and is listed on the Stock Exchange of Thailand and the Singapore Exchange.

DIGI - Malaysia
Telenor holds a 49 per cent ownership interest in DIGI, the third largest mobile operator in Malaysia. DIGI is listed on Bursa Malaysia.

VimpelCom Ltd.
Telenor Group holds a voting stake of 39.5 per cent (economic stake: 36.7 per cent) in VimpelCom Ltd., operating in 18 markets.
Impact of mHealth in 12 countries

Socio-Economic Impact of mHealth
Country deck – Norway
February 2012

THE BOSTON CONSULTING GROUP
Good health fundamental

Better health has significant positive impact for individual...

- Improved quality of life for self and family
- More likely to attend education
- Less absenteeism from work
- Higher lifetime income

...leading to clear benefits for society

- Less pressure on chronically overburdened healthcare systems
- Positive impact on population, workforce participation, and productivity
- Economic growth in the long term
The key to solving health challenges

The smartphone is the most popular technology among doctors since the stethoscope

- Patient monitoring & compliance
- Information on disease prevention
- Remote diagnostic
- Public wellness apps
- Remote data access
- Health surveillance

The smartphone is the most popular technology among doctors since the stethoscope
The time has come...

Mobile has worldwide reach across all levels of society...

Global penetration approaching 100%

... and sufficient richness in health technology

Simple feature phones can provide important health information

Smart devices and mobile broadband enable advanced medical appliances
...to transform health service delivery

- Reduce costs in elderly care by 25%
- Save mothers and children by reducing maternal and perinatal mortality by 30%
- Reach twice as many rural patients per doctor
- Improve TB treatment compliance by 30 - 70%

1. WHO Global Observatory for eHealth: "mHealth - New horizons for health through mobile", 2011
The promise of a better life

**SMS saves mother and child**

- "Karishma", 26, pregnant mother
- No doctors available to ask
- Does not understand learning signs
- Risk of death during labour
- Receives birth-related information
- Understands learning signs, gets help
- Mother and child lives

**Empowered to live independently**

- "Lennart", 69, widower with dementia
- Unable to call for help when in need
- Frequently forgets medication
- Constantly worried next-of-kin
- Automatic alarms to HC professionals
- Easy to understand medical reminders
- Wireless check-ups and communication

Public information

Remote monitoring

Empowered to live independently

Remote monitoring
More than 500 projects world-wide to date

Source: GSMA mobile health deployment tracker; BCG analysis
Opportunity to accelerate process

Application providers
NGOs, medical community, specialists

Health service providers
Governments, hospitals, private

Infrastructure providers
Telcos, IT service providers

Regulators
Ministries of Telecom, Health etc.

Innovate
Embrace
Empower
Unleash

(...)

whatever can be done will be done. The only question is whether it will be done by you or to you

1. Thomas Friedman, "Friedman’s Five Rules for a Flat World", 2010
Telcos could take facilitator role

- Key infrastructure
- Required technical competence
- Experience in user-focused innovation
- Trusted partner
- Global partnerships

Source: UN Foundation; GSMA; BCG experience
The struggle to deliver on MDGs

Pakistan

**MDG 4: Reduce child mortality**
- Under-five mortality per 1,000 live births

- **Current**: 87
- **Target 2015**: 41
- **Improvement**: -53%

**MDG 5: Improve maternal health**
- Maternal deaths per 100,000 live births

- **Current**: 260
- **Target 2015**: 123
- **Improvement**: -53%

**MDG 6: Combat HIV/AIDS, malaria and other diseases**
- Tuberculosis prevalence per 100,000

- **Current**: 379
- **Target 2015**: 123
- **Improvement**: -60%

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1. As of latest WHO data from 2009
2. According to MDG targets development from 1990
Source: WHO; United Nations; BCG analysis
Norwegian government realizes current welfare model not sustainable as the society ages

"With what we know today about the coming increase in the elderly population, what it's going to cost, and how many hands we need, it's time to face it – it's not going to work"

"We have been too focused on building more elderly homes, instead of empowering the elderly to live full lives in their own homes as long as possible"

"(...) there is a different approach that offers a higher quality of life for the elderly. In addition, it's cheaper"

Note: Paraphrased from Norwegian article
Source: www.Aftenposten.no, 06.02.2012

... and to avoid healthcare squeeze

Norway
Focus on four key healthcare challenges

Key mHealth applications depend on countries' challenges

**Key challenges**

- Maternal and child health
- Coverage/access
- Non-communicable diseases
- Overall cost

**mHealth application**

- Public and HC worker information/education
- Remote diagnostic/treatment support
- Remote diagnostic/treatment support
- Patient monitoring/compliance
Provide essential health information

**Country-specific situation**

- **18% of births attended by skilled personnel**
- **High maternal mortality**
  - Maternal deaths

**Potential mHealth impact:**

Public and HC worker information/education

- Improve information among pregnant women through SMS campaigns
- Education of health workers reduce mother and child mortality 30%
- Could save 40,000 mothers and children annually

*Example from pilots/projects in Bangladesh and Pakistan*

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1. Per 100,000 births, 2008 numbers
Source: Ministry of Health and Family Welfare of Bangladesh; Musoke/World Bank; Cochrane/WHO; Jayachandran/Princeton; BCG analysis
Increase HC access in remote areas

**Country-specific situation**

**Large regional differences**
Annual HC expenditure/capita [USD]

<table>
<thead>
<tr>
<th></th>
<th>100</th>
<th>80</th>
<th>60</th>
<th>40</th>
<th>20</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moscow city</td>
<td>85.1</td>
<td></td>
<td></td>
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<td></td>
<td>29.4</td>
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<tr>
<td>Tomsk</td>
<td>-65%</td>
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**Source:** AFNF; Ericsson; WHO; BCG analysis

**Potential mHealth impact:**
Remote diagnostic/treatment support

Remote diagnostics and telemedicine bring healthcare to rural areas with lack of coverage

Doctors can reach twice as many rural patients

*Example from pilot in India*
Reduce costs and free up capacity

<table>
<thead>
<tr>
<th>Country-specific situation</th>
<th>Potential mHealth impact: Remote diagnostic/treatment support</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Respiratory problems key burden from NCDs</strong></td>
<td>Enable patients suffering from chronic diseases to rehabilitate at home</td>
</tr>
<tr>
<td>DALYs from NCDs¹</td>
<td>~4% of Nordic populations have COPD²</td>
</tr>
<tr>
<td>500</td>
<td>Trials in Nordics show 50-60% reduction in hospital nights and re-hospitalisations</td>
</tr>
<tr>
<td>459</td>
<td>Example from pilots in Denmark and Norway</td>
</tr>
<tr>
<td>34% Cardio-vascular</td>
<td></td>
</tr>
<tr>
<td>34% Neoplasms</td>
<td></td>
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<tr>
<td>11% Respiratory</td>
<td></td>
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<tr>
<td>6% Digestive</td>
<td></td>
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<tr>
<td>6% Diabetes</td>
<td></td>
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<tr>
<td>4% Other NCD</td>
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</tbody>
</table>

1. Number of annual Disability-Adjusted Life-Years lost due to Non-Communicable Diseases
2. Chronic Obstructive Pulmonary Disease
3. Having lung capacity < 50%

Source: WHO; UN Foundation; Medisat; BCG analysis
Empowering patients in need of care

Country-specific situation

<table>
<thead>
<tr>
<th>Aging population</th>
<th>% population &gt; 70 yrs</th>
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<tbody>
<tr>
<td>2011</td>
<td>11</td>
</tr>
<tr>
<td>2015</td>
<td>12</td>
</tr>
<tr>
<td>2020</td>
<td>14</td>
</tr>
<tr>
<td>2025</td>
<td>15</td>
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Potential mHealth impact: Patient monitoring/compliance

Home monitoring services can greatly improve lives of elderly

Sensors connected to Home Alert Systems can improve safety, security and ability for elderly to stay independent

Up to 25% cost saving potential in assisted home care

*Example from projects/pilots in Scotland and Norway*

1. 5-10% of people without HIV and 30% of those co-infected with HIV develop active disease
Source: WHO; United National Foundation; Telenor; Norwegian Ministry of Health and Care services; OnSat; Healthier Scotland; BCG analysis
<table>
<thead>
<tr>
<th>Impact significant for all countries</th>
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</thead>
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<tr>
<td>Maternal information service saves mothers' and children's lives</td>
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<tr>
<td>SMS treatment compliance helps cure TB</td>
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<tr>
<td>Remote treatment reduces COPD hospitalizations</td>
</tr>
<tr>
<td>Remote monitoring reduces elderly care costs</td>
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</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>Impact</th>
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<tbody>
<tr>
<td>Bangladesh</td>
<td>Save 40,000 mothers and children annually</td>
</tr>
<tr>
<td>India</td>
<td>Save 290,000 mothers and children annually</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Save 75,000 mothers and children annually</td>
</tr>
<tr>
<td>Russia</td>
<td>Cure 50,000 of tuberculosis</td>
</tr>
<tr>
<td>Thailand</td>
<td>Cure 40,000 of tuberculosis</td>
</tr>
<tr>
<td>Hungary</td>
<td>Save 40,000 annual hospital nights</td>
</tr>
<tr>
<td>Montenegro</td>
<td>Save 2,000 annual hospital nights</td>
</tr>
<tr>
<td>Norway</td>
<td>Save €1.5 billion annually</td>
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<tr>
<td>Denmark</td>
<td>Save €1.25 billion annually</td>
</tr>
<tr>
<td>Sweden</td>
<td>Save €2.4 billion annually</td>
</tr>
<tr>
<td>Serbia</td>
<td>Save 40,000 annual hospital nights</td>
</tr>
<tr>
<td>Norway</td>
<td>Save €1.5 billion annually</td>
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More information on Telenor website

Thank you