Mobile for Development

mHealth Country Feasibility Report
Malawi
The GSMA represents the interests of mobile operators worldwide. Spanning more than 220 countries, the GSMA unites nearly 800 of the world’s mobile operators with 250 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and Internet companies, as well as organisations in industry sectors such as financial services, healthcare, media, transport and utilities. The GSMA also produces industry-leading events such as Mobile World Congress and Mobile Asia Expo.

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GSMA Mobile for Development brings together our mobile operator members, the wider mobile industry and the development community to drive commercial mobile services for underserved people in emerging markets. We identify opportunities for social, economic and environmental impact and stimulate the development of scalable, life-enhancing mobile services.

Mobile is the predominant infrastructure in emerging markets. We believe it is the transformative technology that enables us to put relevant, impactful services into the hands of underserved people. Since the creation of GSMA Mobile for Development we have partnered with 50 mobile operators, rolling out 104 initiatives, impacting tens of millions of people across 49 countries.

For more information, please visit the GSMA Mobile for Development website at www.gsma.com/mobilefordevelopment or email m4d@gsma.com.

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Background

The GSMA Mobile for Development mHealth programme connects the mobile and health industries, with the aim of developing commercially sustainable mHealth services that meet public health needs.

In June 2012, the GSMA mHealth programme launched the Pan-African mHealth Initiative (PAMI). PAMI has been funded by UK Aid and Norad to support the scale-up of mHealth in nutrition and maternal and child health, in support of the Millennium Development Goals 4, 5 and 6. PAMI is closely aligned to the UN’s Every Woman Every Child Initiative, Scaling Up Nutrition (SUN) and the Global Nutrition for Growth Compact.

For more information on GSMA Mobile for Development mHealth, please contact mhealth@gsma.com or visit www.gsma.com/mobilefordevelopment/programmes/mhealth

Craig Friderichs
Kai-lik Foh
Charles Mwangi Gathinji
Under the auspices of PAMI, a 3-year 10-country nutrition initiative aims to develop mHealth services in the area of maternal and child health, specifically demand generation, registration and data surveillance, in Sub-Saharan Africa:

- Côte d’Ivoire
- Ghana
- Kenya
- Malawi
- Mozambique
- Nigeria
- Rwanda
- Tanzania
- Uganda
- Zambia
Executive Summary

This report aims to carry out a comprehensive analysis of the current state of mHealth in Malawi. Information has been gathered and presented in the context of the GSMA Pan-African mHealth Initiative and more specifically is aligned to the aim of the 10-country nutrition initiative – to develop commercially sustainable mHealth services that meet public health needs, in the areas of demand generation, registration and data surveillance.

Within the context of mHealth feasibility, this report focuses on 4 specific areas:

1. **The Case for Nutrition and Maternal and Child Health in Malawi**

   Malawi has significant issues in maternal and child health (MCH), particularly in terms of stunting for children. 47% of children under five are stunted and 20% are severely stunted.

   As a result, there is significant alignment between government health priorities and MCH. 21 out of 28 indicators in the Malawi Health Sector Strategic Plan are aligned to these areas.

   The country’s southern regions are the most populated and have the highest incidence of malnutrition and maternal/child mortality.

2. **The Opportunity for mHealth to Support Nutrition and Maternal and Child Health**

   mHealth use cases align well under specific programme indicators in the Malawi Health Sector Strategic Plan.

   The potential reach of mHealth in MCH and nutrition is approximately 400,000 pregnant women and new mothers. However, the deployment of IVR technologies (along with SMS or USSD based services) and the widespread use of phone access sharing can widen the reach by 3 times, to around 1.3m pregnant women and new mothers.

   However, there are significant issues with the source of commercial sustainability of potential services due to the economic situation in Malawi. Relative mobile access cost is one of the highest in Africa, with consumers already paying an average of 20% of their monthly income on mobile.
The Readiness of the Players in Malawi to Support mHealth

44% of the 45 mHealth services in Malawi, which are monitored by the GSMA mHealth Tracker, are focused on maternal and child health, with 16 services featuring demand generation, registration and data surveillance. The majority of services are donor-funded. There is one known health messaging service operated by AirTel.

There is a wealth of experience in the mHealth sector and a number of services have scaled impressively across the country. Commercial models for mHealth have however been rare, due to the economic conditions in Malawi.

Aggregator interest in Malawi is limited and focuses more on high value commercial VAS such as ringtones and call ringback tones, both reflecting the nascent state of the VAS market.

Operators are increasingly targeting rural customers in order to increase their subscribership, as the urban market is increasingly saturated. mHealth can be an important component of rural targeting for mobile operators.

Feedback from operators however suggests that mHealth at present is not a high priority area, unless they can see clear, short term, commercial potential and partners with market-ready products.

There have been recent moves by the national regulator to liberalize the market and drive down mobile costs for the consumer. There is also an opportunity at the moment to define mHealth-friendly regulations in the health sector to enable the mobile sector to participate positively in mHealth.

The Potential for mHealth Partnerships

There is potential for a multi-partner approach to present a compelling product map to operators in Malawi, as a complete solution for mHealth management. However, the business model for these products will be, for the time being, heavily reliant on government and donor funding for sustainability.

The immediate outlook for commercial, direct-to-consumer mHealth services in the near term may be limited. Therefore, the near term focus is to demonstrate the relative efficiency of mHealth interventions to government, to reach and impact beneficiaries, and work with the mobile operators to minimize the cost of mobile access while the market for mobile VAS matures over time.
The Case for Nutrition and Maternal and Child Health in Malawi

**Maternal Mortality**
per 100,000 births

- 2010: 460

**Infant Mortality**
per 1,000 births

- 2012: 46

**Child Mortality <5**
per 1,000 births

- 2012: 71

**Children aged <5 stunted**

- 2010: 48%

**Geographical Health Burden**

- Child malnutrition percentile weight of Children under 5
  - 20.97~22.31
  - 16.94~18.28

- Infant mortality rate per 1000 live births
  - 94.86~98.05
  - 88.51~91.68
  - 82.16~85.33
  - 52.06~54.93
  - 60.67~63.55
  - 63.55~66.43
Children under 5 underweight - trend & projection

1990: 27%
2015: 12%

Under 5 child mortality rate in Malawi - trend & projection

Deaths per 1000 births

1990: 230
2015: 57

Maternal Mortality in Malawi - trend & projection

Per 1000,000 live births

2000: 1150
2015: 435
The Case for Nutrition and Maternal and Child Health in Malawi

Key Observations

There is a strong case for addressing Maternal and Child Health and nutrition in Malawi.

- Malawi has significant issues in maternal and child health, particularly in terms of stunting for children.
- 21 out of the 28 indicators in the Malawi Health Sector Strategic Plan is aligned to these areas.
- The country’s southern regions are the most populated and have the highest incidence of malnutrition and maternal/child mortality.

Relative to the other GSMA priority countries, Malawi has a lower maternal and child mortality rate, but incidence of stunting is relatively high.

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Rank*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal mortality / 100,000 births (2010)</td>
<td>460</td>
<td>#7</td>
</tr>
<tr>
<td>Infant mortality / 1,000 births (2012)</td>
<td>46</td>
<td>#7</td>
</tr>
<tr>
<td>Child mortality &lt;5 / 1000 births (2012)</td>
<td>71</td>
<td>#7</td>
</tr>
<tr>
<td>Children aged &lt;5 stunted (2011)</td>
<td>48%</td>
<td>#2</td>
</tr>
</tbody>
</table>

* Rank relates to 10 GSMA focus countries, within the Pan-African mHealth Initiative, indicated on page 5 of this report.

Figure 1 Source: WHO statistics. Note: The WHO statistics defer from those published in the Malawi Health Sector Strategic Plan (2011-2016)
## Alignment of Health Sector Strategic Plan

21 out of the 28 targets in the Malawi Health Sector Strategic Plan are aligned to MCH and nutrition.

**Health Impact (4/4) / Coverage of Health Services (10/16)**

**Coverage of Health Determinants (4/4) / Coverage of Risk Factors (1/1)**

**Health Systems Outputs (2/8) / Health Investment (0/4)**

<table>
<thead>
<tr>
<th>No</th>
<th>INDICATOR</th>
<th>BASELINE (2010-11)</th>
<th>TARGET (2015-16)</th>
</tr>
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<tr>
<td><strong>HEALTH IMPACT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Maternal Mortality Ratio (MMR)</td>
<td>675/100000</td>
<td>115/100000</td>
</tr>
<tr>
<td>2</td>
<td>Neonatal Mortality Rate (NMR)</td>
<td>30/1000</td>
<td>12/1000</td>
</tr>
<tr>
<td>3</td>
<td>Infant Mortality Rate (IMR)</td>
<td>66/1000</td>
<td>45/1000</td>
</tr>
<tr>
<td>4</td>
<td>Under five Mortality Rate (USMR)</td>
<td>112/1000</td>
<td>78/1000</td>
</tr>
<tr>
<td><strong>COVERED OF HEALTH SERVICES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>EHP coverage (% Facilities able to deliver EHP services)</td>
<td>74%</td>
<td>90%</td>
</tr>
<tr>
<td>6</td>
<td>% of pregnant women starting antenatal care during the first trimester</td>
<td>9%</td>
<td>20%</td>
</tr>
<tr>
<td>7</td>
<td>% of pregnant women completing 4 ANC visits</td>
<td>46%</td>
<td>65%</td>
</tr>
<tr>
<td>8</td>
<td>% of eligible pregnant women receiving at least two doses of intermittent preventative therapy</td>
<td>60%</td>
<td>90%</td>
</tr>
<tr>
<td>9</td>
<td>Proportion of births attended by skilled health personnel</td>
<td>58% (IMIS) 75% (WMS)</td>
<td>80% 80%</td>
</tr>
<tr>
<td>10</td>
<td>Penta III coverage</td>
<td>9%</td>
<td>94%</td>
</tr>
<tr>
<td>11</td>
<td>Proportion of 1 year-old children immunized against measles</td>
<td>88%</td>
<td>90%</td>
</tr>
<tr>
<td>12</td>
<td>Proportion of 1 year-old children fully immunized</td>
<td>80.90%</td>
<td>86%</td>
</tr>
<tr>
<td>13</td>
<td>% of pregnant women who slept under an insecticide net (ITN) the previous night</td>
<td>49.40%</td>
<td>80%</td>
</tr>
<tr>
<td>14</td>
<td>% of under 5 children who slept under an insecticide net (ITN) the previous night</td>
<td>55.40%</td>
<td>80%</td>
</tr>
<tr>
<td>15</td>
<td>Neonatal postnatal care (PNC) within 48 hours for deliveries outside the health facility</td>
<td>baseline to be established</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>% of women who received postpartum care after delivery by skilled health worker within seven days</td>
<td>10%</td>
<td>30%</td>
</tr>
<tr>
<td>17</td>
<td>Prevalence of HIV among 15-24 year old pregnant women attending ANC</td>
<td>12%</td>
<td>6%</td>
</tr>
<tr>
<td>18</td>
<td>% of HIV+ pregnant women who were on ART at the end of their pregnancy (to reduce mother to child transmission and for their own health)</td>
<td>35%</td>
<td>82%</td>
</tr>
<tr>
<td>19</td>
<td>% of health facilities satisfying health centre waste management standards</td>
<td>55%</td>
<td>55%</td>
</tr>
<tr>
<td>20</td>
<td>% surveyed population satisfied with health services (by gender and rural/ urban)</td>
<td>83.5% (urban) 76.4% (rural)</td>
<td>90% (urban) 90% (rural)</td>
</tr>
<tr>
<td><strong>COVERED OF HEALTH DETERMINANTS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>% of households with an improved toilet</td>
<td>46%</td>
<td>60%</td>
</tr>
<tr>
<td>22</td>
<td>% of households with access to safe water supply</td>
<td>79.7% (DHS 2010)</td>
<td>TBA</td>
</tr>
<tr>
<td>23</td>
<td>% of children that are stunted</td>
<td>47% (DHS 2010)</td>
<td>TBA</td>
</tr>
<tr>
<td>24</td>
<td>% of children that are wasted</td>
<td>4.0% (DHS 2010)</td>
<td>TBA 3</td>
</tr>
<tr>
<td><strong>COVERED OF RISK FACTORS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Contraceptive Prevalence Rate (modern methods)</td>
<td>42% (DHS 2010)</td>
<td>60%</td>
</tr>
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<td><strong>HEALTH SYSTEMS OUTPUTS (AVAILABILITY, ACCESS, QUALITY, SAFETY)</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>26</td>
<td>OPD service utilization (OPD visits per 1000 population)</td>
<td>531/1000 pop</td>
<td>&gt;1000/1000 pop</td>
</tr>
<tr>
<td>27</td>
<td>% of fully functional health centres offering basic EmOC services</td>
<td>98</td>
<td>100</td>
</tr>
<tr>
<td>28</td>
<td>% of non public providers in hand to staff/ serve areas signed SLAs with DHOs</td>
<td>90%</td>
<td>100%</td>
</tr>
<tr>
<td>29</td>
<td>% of monthly drug deliveries monitored by health facility committees</td>
<td>85%</td>
<td>95%</td>
</tr>
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<td>30</td>
<td>% of health facilities with stock outs of tracer medicines in last 7 days (TT vaccine, LA, Oxytocin(oxy), ORS, Ceftriaxone, cotrim Diazepam Inj., All Rapid HIV Test kits, TB drugs, Magnesium Sulphate, (Mag sulph) Gentamicin, Metronidazole, Ampicillin, Benzyl penicillin, Safe Blood, RDTs)</td>
<td>TT vaccine=98% / LA=98% / Oxy=95% / Cef=97% / Cotrim=90% All Rapid HIV test kits=89% TB drugs=99% / Mag sulph=99% / Gent=99% / Mel=99% / Amp=99% / Benz=99% / Safe blood=100% / RDTs=100%</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>% of health facilities supervised and written feedback provided</td>
<td>63%</td>
<td>100%</td>
</tr>
<tr>
<td>32</td>
<td>% facilities reporting data (according to national guidelines)</td>
<td>96%</td>
<td>99%</td>
</tr>
<tr>
<td>33</td>
<td>% districts reporting timely data</td>
<td>52%</td>
<td>90%</td>
</tr>
<tr>
<td>34</td>
<td>Bed occupancy rate</td>
<td>50%</td>
<td>80%</td>
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<tr>
<td><strong>HEALTH INVESTMENT</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>35</td>
<td>% health facilities with functioning equipment in line with standard equipment list at time of visit</td>
<td>baseline to be established</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>% health facilities with functioning water, electricity &amp; communication at time of visit</td>
<td>79% w 87% e 90% c</td>
<td>100% w 100% e 100% c</td>
</tr>
<tr>
<td>37</td>
<td>% health centres with minimum staff norms to offer EHP services</td>
<td>Clinician=30% / Nurses/Mws=50% ENQA=48% / Composite=19% Clinician=80% / Nurses/Mws=75% ENQA=70% / Composite=42%</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>% GoM budget allocated to health sector</td>
<td>52,40%</td>
<td>15%</td>
</tr>
</tbody>
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**Figure 2** Source: Malawi Health Sector Strategic Plan (2011-2016)
Priority Areas in Nutrition and Maternal and Child Health

The incidence of malnutrition and infant mortality is greater in the south where there is a relatively higher population.

<table>
<thead>
<tr>
<th>POPULATION DENSITY</th>
<th>POVERTY</th>
<th>FINANCED ACTIVITIES</th>
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<tbody>
<tr>
<td>Population Density Per Square kilometer</td>
<td>Poverty Headcount Index</td>
<td>Health &amp; other social services</td>
</tr>
<tr>
<td>177.8-222.6</td>
<td>0.84-0.9373</td>
<td>Water, Sanitation &amp; Flood Protection</td>
</tr>
<tr>
<td>140.1-177.8</td>
<td>0.6869-0.84</td>
<td></td>
</tr>
<tr>
<td>57.63-140.1</td>
<td>0.4365-0.6869</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.1861-0.4365</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>MALNUTRITION</th>
<th>INFANT MORTALITY</th>
<th>MATERNAL HEALTH</th>
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</thead>
<tbody>
<tr>
<td>Child malnutrition percentile weight of Children under 5</td>
<td>Infant mortality rate per 1000 live births</td>
<td>Births attended by skilled health staff. % of total</td>
</tr>
<tr>
<td>20.97-22.31</td>
<td>94.86-98.05</td>
<td>52.06-54.93</td>
</tr>
<tr>
<td>16.94-18.28</td>
<td>88.51-91.68</td>
<td>60.67-63.55</td>
</tr>
<tr>
<td></td>
<td>82.16-85.33</td>
<td>63.55-66.43</td>
</tr>
</tbody>
</table>

Figure 3&4 Source: http://maps.worldbank.org/afr/malawi
Trends in Malnutrition and Mortality in Children

Strategies in managing malnutrition and infant mortality place the country on track to hit the MDG targets.

Vaccines for various diseases, effective treatment of pneumonia at community level and effective prevention and treatment of malaria and diarrhoeal diseases have contributed to success in this area.

Trends in Maternal Mortality

Significant challenges still exist in reaching targets in maternal mortality. Sepsis and post-partum haemorrhage are cited as key causes of death. Access to emergency obstetric care and information on family planning, to reduce fertility rate, are identified as the key strategies to manage this trend.

Figure 5&6 Source: Malawi Health Sector Strategic Plan (2011-2016)

Figure 7 Source: Malawi Health Sector Strategic Plan (2011-2016)
The Opportunity for mHealth to Support Nutrition and Maternal and Child Health

Unique Subscribers Penetration vs Geographical Coverage

- Unique mobile subscribers penetration: 20%
- Geographical coverage: 80%

Reach of mobile phone vs landline and electricity

- Electricity within 100m of dwelling: 21%
- Electricity inside dwelling: 7%
- Landline: 1%
- Mobile phone: 36%
SMS based services can reach up to 400,000 pregnant women and new mothers, but have the potential to reach almost twice that size if IVR based services are used:

**The Opportunity in 2015**

- **SMS Based Services**
  - Total Addressable Market: 720,000

- **SMS & IVR Based Services**
  - Total Addressable Market: 1,300,000

**The Opportunity in 2020**

- **SMS Based Services**
  - Total Addressable Market: 1,300,000

- **SMS & IVR Based Services**
  - Total Addressable Market: 2,100,000
The Opportunity for mHealth to Support Nutrition and Maternal and Child Health

Key Observations

mHealth has been identified as a key area to support these health areas, both in terms of the reach and relative affordability of mobile access.

• mHealth use cases align well under specific programme indicators in the Malawi Health Sector Strategic Plan (2011-2016).

• The potential reach of mHealth in MCH and nutrition is approximately 400,000 pregnant women and new mothers. However, the deployment of IVR technologies (along with SMS or USSD based services) and the widespread use of phone access sharing could widen that reach by 3 times, to around 1.3m pregnant women and new mothers.

• However, there are significant issues with the source of commercial sustainability of potential services due to the economic situation in Malawi. Relative mobile access costs is one of the highest in Africa with consumers already paying an average of 20% of their monthly income on mobile.
Alignment to the Health Sector Strategic Plan

mHealth aligns well to a number of programme aims within the Health Sector Strategic Plan.

### mHealth Use Cases
- Monitoring and providing real time updates on stock-outs and drug authentication e.g. SMS4Life
- Targeted, stage-based, messaging for behaviour change communication e.g. MAMA in SA
- Mobile job aids, quizzes and training which can be updated on the fly e.g. Mobile Kunji in India
- Mobile-enabled registration and data collection for community health workers e.g. DTree
- Supervisory (and incentive) systems providing real-time supervision and monitoring e.g. CommCare
- mHealth application direct linkages to DHIS2 systems e.g. CommCare
- Error-checking and protocols built into data collection applications on mobile e.g. CommCare

### Alignment to specific Ministry of Health Strategies
- Strengthen the security system within the supply chain of commodities
- Provide enabling structures for health promotion delivery
- Improve performance management
- Build the capacity of the health sector to effectively generate, manage, disseminate and utilise health information at all levels of the sector for programme management and development
- Strengthen monitoring and evaluation together with epidemiology and surveillance systems for Malawi’s health sector

Figure 8

The Reach of mHealth

There is a relatively small base population in Malawi that can directly access phones and messages.

<table>
<thead>
<tr>
<th>Value</th>
<th>Rank*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population, 2012</td>
<td>16m</td>
</tr>
<tr>
<td>No. of pregnant mothers, 2012</td>
<td>0.5m</td>
</tr>
<tr>
<td>No. of mothers with children &lt; 5y, 2012</td>
<td>2.2m</td>
</tr>
<tr>
<td>Unique mobile subscribers penetration 2013 (5-y growth)</td>
<td>20.7% (15%)</td>
</tr>
<tr>
<td>Geographical coverage, 2009</td>
<td>79%</td>
</tr>
<tr>
<td>% Rural, 2012</td>
<td>84%</td>
</tr>
<tr>
<td>Literacy rate &gt;15y Overall (Women), 2008</td>
<td>61% (51%)</td>
</tr>
</tbody>
</table>

* Rank relates to 10 GSMA focus countries, within the Pan-African mHealth Initiative, indicated on page 5 of this report.

Figure 9 Source: WHO, World Bank, GSMA Intelligence, Mobile Development Intelligence (MDI), and GSMA estimates
Shared phone access, which has increased dramatically over the last 5 years, signals a promising trend for the potential for reach.

However, access by the very poor and rural remains relatively low.

<table>
<thead>
<tr>
<th>BACKGROUND CHARACTERISTICS</th>
<th>LANDLINE TELEPHONE</th>
<th>MOBILE PHONE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IHS2</td>
<td>IHS3</td>
</tr>
<tr>
<td>PLACE OF RESIDENCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>5.6</td>
<td>4.4</td>
</tr>
<tr>
<td>Rural</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Rural North</td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Rural Centre</td>
<td></td>
<td>0.1</td>
</tr>
<tr>
<td>Rural South</td>
<td></td>
<td>0.2</td>
</tr>
<tr>
<td>SEX OF HOUSEHOLD HEAD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.0</td>
<td>0.9</td>
</tr>
<tr>
<td>Female</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>CONSUMPTIVE QUINTILE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st (Lowest)</td>
<td>0.1</td>
<td>0.0</td>
</tr>
<tr>
<td>2nd</td>
<td>0.1</td>
<td>0.0</td>
</tr>
<tr>
<td>3rd</td>
<td>0.1</td>
<td>0.0</td>
</tr>
<tr>
<td>4th</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>5th (highest)</td>
<td>4.1</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Overall, 36 percent of households reported having a mobile phone while only less than one percent of households reported having a landline telephone.

Access to phones for the very poor still very low at 11.5%.
Paying for mHealth

Malawi presents a challenge in commercial sustainability, as the majority of health spend relies on donor funding and mobile spend is already very high compared to personal income.

<table>
<thead>
<tr>
<th>Value</th>
<th>Rank*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income per capita (USD), 2012</td>
<td>268</td>
</tr>
<tr>
<td>Health expenditure per capita (USD), 2011</td>
<td>31</td>
</tr>
<tr>
<td>% below poverty line, 2010</td>
<td>51%</td>
</tr>
<tr>
<td>% out-of-pocket spend, 2011</td>
<td>53%</td>
</tr>
<tr>
<td>% donor funding, 2011</td>
<td>52%</td>
</tr>
<tr>
<td>% government funding, 2011</td>
<td>73%</td>
</tr>
<tr>
<td>Monthly spend on mobile (USD), 2012</td>
<td>4</td>
</tr>
<tr>
<td>% income spent on mobile, 2012</td>
<td>18%</td>
</tr>
</tbody>
</table>

* Rank relates to 10 GSMA focus countries, within the Pan-African mHealth Initiative, indicated on page 5 of this report.

Figure 12 Source: WHO, World Bank, GSMA Wireless Intelligence Statistics
The Opportunity in 2015

SMS based services can reach up to 400,000 pregnant women and new mothers, but have the potential to reach almost twice that size if IVR based services are used and as much as three times if overall access to mobile phones is taken into consideration.

<table>
<thead>
<tr>
<th></th>
<th>SMS based (only literates are reached)</th>
<th>IVR &amp; SMS based (both literates and non-literate are reached)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literate consumers who own mobile phones</td>
<td>400,000</td>
<td>725,000</td>
</tr>
<tr>
<td>Literate consumers who have access to mobile phones</td>
<td>720,000</td>
<td>1,300,000</td>
</tr>
</tbody>
</table>

The Opportunity in 2020

The addressable market will be 2.1 million by the end of the decade, growing by around 60% from 2015 to 2020.

<table>
<thead>
<tr>
<th></th>
<th>SMS based (only literates are reached)</th>
<th>IVR &amp; SMS based (both literates and non-literate are reached)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literate consumers who own mobile phones</td>
<td>560,000</td>
<td>930,000</td>
</tr>
<tr>
<td>Literate consumers who have access to mobile phones</td>
<td>1,300,000</td>
<td>2,100,000</td>
</tr>
</tbody>
</table>

Figure 13&14
The Readiness of the Players in Malawi to Support mHealth

Key Players in the mHealth Value Chain

There is a relatively small number of players in the value chain in Malawi and the market for VAS is underdeveloped.

<table>
<thead>
<tr>
<th>Content Providers</th>
<th>mHealth Service Providers</th>
<th>Content Aggregators</th>
<th>Mobile Operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create original, tagged, health content which is validated with national and international standards</td>
<td>Develop / implement mHealth solutions for messaging, data collection, distribution and management</td>
<td>Adapt, package content, work with multiple operators and distribution platforms, while tracking usage across different platforms</td>
<td>Provide the mobile connectivity for distributing content and data collection</td>
</tr>
</tbody>
</table>

### Examples in Malawi

- `• VillageReach`  
- `• DTree`  
- `• Verse`  

### Business Model Licensing

- Open source
- Subscription Freemium (for consumer services)
- Government / donor grant (for registration, data collection services)

### Revenue Model

- Revenue share with operator  
- Voice, data, SMS revenue  
- Revenue share with aggregator

### Key Challenges

- Most of the content in health is given away free because of the low ability to pay
- Subscription services have been tried by AirTel/Verse with some success in the urban market, Government / donor funded registration services may not be sustainable in the long run
- Interest in Malawi is relatively low from aggregators due to the relatively low commercial volumes
- Operators currently focusing on improving infrastructure and service quality, and are on the early stage of marketing high value VAS (ringtones, CRBT)
mHealth Service Providers

Key Observations
There is good coverage of mHealth use cases, but almost all are reliant on donor funding as a future business model.

• 44% of the 45 mHealth services in Malawi, which are monitored by the GSMA mHealth Tracker, are focusing on maternal and child health. 16 of those services feature demand generation, registration and data surveillance. The majority of services are donor-funded. One known health messaging service is operated by AirTel.

• There is a wealth of experience in the mHealth sector. A number of services have scaled impressively across the country. Commercial models for mHealth have however been rare due to the economic conditions in Malawi.

mHealth Tracker
The GSMA mHealth Tracker is a customised tool which collates mobile health products and services around the globe, tracking solutions in both planning phase and those which have been commercially deployed.

There are 45 tracked mHealth services in Malawi.

Figure 16
NGO-Led Case Study: Village Reach “Chipatala Cha Pa Foni”

PROFILE

**mHealth Use Case:** Integrated MCH service, featuring a toll-free case management hotline offering protocol-based health information, referrals and an automated and personalized tips and reminders service for pregnant women, guardians of young children and women of child bearing age

**Delivery Channels:** Voice, SMS, mobile apps

**Health Focus:** Reproductive, Maternal, Neonatal and child health

**Target Users:** CHWs, Pregnant women, caregivers of young children, women of child bearing age

**Geographical Focus:** Balaka, Ntcheu, Nkhotakota, and Mulanje

VALUE PROPOSITION

**Source Of Content:** Malawi Ministry of Health IMCI, Family Planning and Maternal and Newborn Health Community Case Management protocols, MAMA, Grameen Foundation, Baby Centre

**Degree Of Localization:** Translated and field tested by Village Reach, into Chichewa and Chiyao

**Implementation Experience:** Since 2011

**Partner Coverage:** MoH (standards, protocols and implementation), Baobab (technology), AirTel (support for scale up), Concern Worldwide / Save the Children (for scale up in new districts), SSDI, and Presidential Initiative on Safe Motherhood (for scale up in new districts), Innovations Working Group (IWG)

**Funding:** IWG, Concern Worldwide, Seattle International Foundation

**Business Model:** Grant-funded and MoH in-kind support (Detailed cost estimate by district for national scale)

**Success To Date:** Significant increase in maternal and child health knowledge and uptake of facility and home based MNCH services among users, high satisfaction among users and stakeholders, and decrease in health center workload due to advice provided on home based care. On average 600 calls per month

**Reach:** 15 000 callers, 8 000 of those registered into tips and reminders service; service spans across central and south Malawi (Balaka, Mulanje, Ntcheu and Nkhotakota)
A Mother is registered by a Hotline Worker

The Hotline Worker captures the mothers data into digital forms on an application on her feature phone/ tablet

Protocol-based health centre referrals

The Hotline Worker counsels the mother using job aids (decision support software) available on touch screens (J2 Monitors)

The Hotline Worker follows up on clients who were referred to a healthcare facility

Hotline Workers register clients into the Tips and Reminders service

Clients receive and retrieve messages (SMS & voice recordings/ IVR) either using their mobile phone/ the mobile phone of a community volunteer

**Figure 17**
NGO-Led Case Study: DTREE - Community Case Management

PROFILE

**mHealth Use Case:** Mobile decision support tool for community case management, for use by health surveillance assistants  
**Delivery Channels:** Apps

**Health Focus:** Maternal and Child Health  
**Target Users:** CHWs  
**Geographical Focus:** Lilongwe, Ntcheu, Zomba

VALUE PROPOSITION

**Source Of Content:** Malawi Ministry of Health IMCI and Maternal and Newborn Health Community Case Management protocols  
**Degree Of Localization:** Already localized (language & culture)  
**Implementation Experience:** Since 2011  
**Partner Coverage:** Catholic Relief Services, Dimagi, Malawi MoH  
**Funding:** Catholic Relief Services - under USAID funded IMPACT project  
**Business Model:** Donor funded

**Success To Date:**  
- Better adherence to the sick child form  
- Insight into deviations from the protocol  
- Increased completeness (90% vs. 100% of visits)  
- Increased referrals (5% vs. 11% of visits)  
- Increased follow-up (0% vs. 26%) of visits  
- Real-time service data  
- Improved drug consumption and stock outs  
- Increased satisfaction from caregivers about services

**Reach:** 146 registered CHWs (additional 447 registered CHWs across other DTREE mHealth solutions)
HSAs in village clinics; register mothers using an application (Zenji) on their mobile phones

Protocol-based health centre referrals for sick children

The HSA Counsels the mother using job aids (decision support software) available on the application

Client related data are captured throughout this process

The HSA follows up on clients who were referred to a healthcare facility

HSAs complete digital forms to report on stock levels at facilities

Senior HSAs review digital performance reports on their mobile phones; They also complete supervisory checklists

**Figure 18**
UN-Led Case Study: UNICEF – RemindMI
Scheduled SMS clinic appointment reminders for mother and infants

PROFILE

mHealth Use Case: Community agents register births or pregnancies. Agents and willing clients receive appointment reminders for mothers and infants. Health facilities can request for specific patient follow-up through community agents

Delivery Channels: SMS

Health Focus: Maternal and Child Health and Nutrition

Target Users: Health Surveillance Assistants (HSAs), mothers via HSAs
Target - infants exposed to HIV, but service extends to include all infants and their caretakers

Geographical Focus: 17 out of 28 districts in Malawi

VALUE PROPOSITION

Source Of Content: Standard Malawi MoH protocol for ANC and post-natal care, standard care guidelines built into system

Degree Of Localization: English only

Implementation Experience: Since 2010

Partner Coverage: RapidSMS; Government of Malawi, Clinton Health Access Initiative, Airtel, TNM

Funding: UNICEF

Business Model: Donor/ government

Success To Date: Reduction in missed or delayed client appointments, increase in timely attendance of hospital visits by patients

Reach: Reached 60% of all districts (1531 mothers, who agreed to reminders, and 15,523 births registered)
HSAs can register mothers using their mobile phones.

The HSA sends an SMS using a predetermined format to the mobile system.

Mother gets unique identification number. Unique identifier only used within the system.

HSA registers the birth of a child using her mobile phone.

The HSAs do regular check-ups with the mothers and their children: ANC, Post-natal (Immunization & 1000 days nutrition tracking).

Data are captured throughout these check-ups.

SMS’ are sent to HSAs and registered mothers to inform them of upcoming appointments for mothers.

The HSA has the responsibility to inform the mother to go to the healthcare facility.
UN-Led Case Study: UNICEF - Results

Transmission of Early Infant Diagnosis (EID) of HIV test results with Rapid SMS

VALUE PROPOSITION

Source Of Content: -
Degree Of Localization: -
Implementation Experience: Since 2010
Partner Coverage: mHealth in Malawi since 2010
Funding: Donor funded (UNICEF)

Business Model: Donor/ government
Success To Date: Decrease in turnaround time for client laboratory results
Reach: 436 active sites receiving results, 92,000 EID samples processed at labs, 57,258 results delivered to clinics via SMS. Implemented in 4 out of 5 national laboratories

PROFILE

mHealth Use Case: EID, to identify HIV exposed infants who are in need of treatment. This process consists of sending an infants’ Dry Blood Sample (DBS) to a dedicated laboratory and waiting for the result to be returned

Delivery Channels: SMS
Health Focus: Child health
Target Users: CHWs
Geographical Focus: All districts in Malawi

Dry Blood Spot (DBS) Sample Submission
Infant DBS samples taken at small health centres and collected and taken to district hospitals and then all the samples are sent to a national laboratory for testing

EID Test Results Captured
EID test results are recorded on the Laboratory PC

Retrieve Results
Results are delivered in real-time by SMS to the clinic workers directly on their phones (retrieved by replying to SMS with their PIN)
Sent to SMS printers (CHAI)

Figure 20
UN-Led Case Study: UNICEF - Anthrowatch

Nutrition status assessment - growth monitoring programme

PROFILE

mHealth Use Case: Service implemented at weekly nutrition clinics. Health workers enter a child’s data, and through a feedback loop system, RapidSMS instantly alerts field monitors of their patients’ nutritional status. Automated basic assessment tests identify children with malnutrition who were previously falling through the cracks.

Delivery Channels: SMS, web

Health Focus: Child health and nutrition

Target Users: HSAs, Nutrition Programme Managers at district and national level

Geographical Focus: 16 districts

VALUE PROPOSITION

Source Of Content: Core nutrition/growth monitoring indicators

Degree Of Localization: Only in English

Implementation Experience: Since 2009

Partner Coverage: RapidSMS, Government of Malawi, Airtel, TNM

Funding: UNICEF

Business Model: Donor/government

Success To Date: Active & timely identification of acute malnutrition cases

Reach: 60% of districts (92,576 children assessed to date)

Data Capturing

HSA records growth indicators of infant: age, gender, height, weight, upper arm circumference, and whether or not the child has Oedema.

This is transmitted to the system by SMS.

Analysis of Data

The system automatically analyses the data.

Real-Time Reporting

Reports can be reviewed by nutrition programme managers at district and national level.

Transmission of Assessment Results

An SMS with assessment results is automatically sent back to the HSA’s to inform them of their patient’s nutritional status.

Figure 21
NGO-Led Case Study: CHAI – SMART

**mHealth Use Case:** SMART stands for ‘SMS Printers to Accelerate Return of Test Results for Early Infant Diagnosis of HIV/AIDS’. One of the greatest barriers to infant initiation of ART is the receipt of a positive HIV test which can be attributed to logistical inefficiencies, poor compliance, difficulty in caregiver follow-up and complex system implementation. In 2010 Zambia started a pilot to use a RapidSMS based mobile health system to deliver the project results from reference labs back to the facility using SMS. Project was soon after replicated in Malawi

**Delivery Channels:** SMS

**Health Focus:** Child health

**Target Users:** HSAs

**Geographical Focus:** Nationwide

**PROFILE**

**Source Of Content:** -

**Degree Of Localization:** -

**Implementation Experience:** Since 2010

**Partner Coverage:** In Zambia, prior to deploying in Malawi (2010)

**VALUE PROPOSITION**

**Funding:** UNICEF

**Business Model:** Donor

**Success To Date:** -

**Reach:** 123 sites with SMS printers

---

**Sample to Lab**

Sample collected at health centre

---

**Sample Analysis**

Samples are analysed at national laboratory and results are imported to a Local Information Management System

---

**Results Synced with Results 160**

Results are transmitted to Results 160 server via a secure data connection

---

**Results to Health Centre**

Results are sent to SMS printers

Results can also be delivered in real-time SMS to the clinic workers directly on their phones

---

**Figure 22**
NGO-Led Case Study: CHAI – Patient Follow-up

Using an SMS system to manage patient follow-up

PROFILE

**mHealth Use Case:** Improving retention and accelerating follow-up of mother/infant pairs, using SMS mobile technology

**Delivery Channels:** SMS

**Health Focus:** MNCH

**Target Users:** HSAs

**Geographical Focus:** Mangochi and Salima districts

VALUE PROPOSITION

**Source Of Content:** -

**Degree Of Localization:** -

**Implementation Experience:** Piloted in Machinga District in 2012; MOU with Malawi MoH in 2006 to strengthen health systems in the most challenged districts (across a number of health areas)

**Partner Coverage:** Innovation Working Group, Frontline SMS, Malawi MoH

**Funding:** -

**Business Model:** -

**Success To Date:** 80% of 1522 patients registered in pilot returned to health facilities for services, increase in efficiency and reduction in workload associated with patient follow-up

**Reach:** 10 facilities in Mangochi and Salima districts

---

**Request to Follow-Up on Patient**

HCW fills in Request for Client Follow-up Form (RCFU)

**SMS to CHW to Follow-Up on Patient**

HCW at facility sends SMS from Frontline SMS software on laptop

**Results to Health Centre**

Results are sent to SMS printers

Results can also be delivered in real-time SMS to the clinic workers directly on their phones

**Client Follow-Up**

CHW follows-up on client and encourages patient to return to healthcare facility

**Update RCFU**

When the client returns to the facility for services the RCFU is updated to include the patient’s return

---

Figure 23
NGO-Led Case Study: JSI – cStock

Supply chain management via SMS

PROFILE

**mHealth Use Case:** Automated information system that includes transmission of logistics information via mobile phone text messaging (short message service, SMS) to a computer application that: responds with information for product resupply, displays product information on a web-based dashboard, and produces reports that can be used to monitor HSA product availability and supply chain performance

**Delivery Channels:** SMS

**Health Focus:** Supply chain management

**Target Users:** HSAs

**Geographical Focus:** Nkhotakota- deployed a 10 month pilot (in process of scaling nationally)

VALUE PROPOSITION

**Source Of Content:** -

**Degree Of Localization:** -

**Implementation Experience:** Implementing since 2010

**Partner Coverage:** Supply Chains 4 Community Case Management, Bill and Melinda Gates Foundation, Innovation Working Group, Malawi MoH.

**Funding:** Bill and Melinda Gates Foundation (pilot phase), IWG Grant for scaling

**Business Model:** Donor

**Success To Date:** Minister endorsed service for national scale up, funding approved for scale up, by April 2014 all scale up training across all districts should be rolled out

**Reach:** Nkhotakota
Stock On Hand Reporting
HSA sends Stock On Hand information for all products managed by SMS to cStock

Calculate Resupply Quantities
cStock calculates the quantity of each product required to bring the village clinic stock levels to maximum stock level

Notify HSA of Resupply Quantities
cStock transmits an SMS message to the Health Center HSA Supervisor with the resupply quantities for the HSA

Order Resupply Quantities
Health Center HSA Supervisor enters data into a resupply quantity worksheet

Package Resupply Quantities
Health Center HSA Supervisor and Drug Store In-Charge pick and pack the resupply quantities using the worksheet and send an SMS message to cStock indicating that the products are ready for pick up

Notify HSA to Fetch Resupply Stock
cStock sends SMS message to HSA that products are ready for pick up

Fetch Resupply Stock
HSA travels to Health Center, picks up products, and sends quantities of products received by SMS message to cStock

Reporting
Produces reports that can be used to monitor HSA performance, product availability, and supply chain performance

Figure 24
NGO-Led Case Study: Global Hope Mobilization – Project Tendai

PROFILE

**mHealth Use Case:** Project Tendai monitors the availability of medicines, their prices and stories relating to difficulties or successes in accessing medical help, as well as cost incurred and distances travelled to access medical attention.

**Delivery Channels:** Apps, web

**Health Focus:** MNCH & supply chain

**Target Users:** CHWs

**Geographical Focus:** Dowa, Ntchisi and Lilongwe

VALUE PROPOSITION

**Source Of Content:** Global Hope Mobilization

**Degree Of Localization:** -

**Implementation Experience:** Implementing since 2011, Project Tendai is implemented in South Africa, Lesotho, Zimbabwe, Mozambique, Malawi, Zambia, DRC and Tanzania (by other organisations)

**Partner Coverage:** Sarpam (donor), Airtel, TNM

**Funding:** Sarpam

**Business Model:** Donor

**Success To Date:** -

**Reach:** 17 community health centres in the districts of Dowa, Ntchisi and Lilongwe

Stock Monitoring & Reporting

Tracking of commodities by Monitors/ HSA (essential medicines package)

Application on smart phone

Figure 25
NGO-Led Case Study: Global Hope Mobilization – m-Mam

PROFILE

**mHealth Use Case:** Use of mobile phones to send reminders for taking medicines and notifications to CHW for missed appointments. Call center for clients

**Delivery Channels:** SMS, text-to-voice

**Health Focus:** MNCH

**Target Users:** CHWs - Mothers and children

**Geographical Focus:** Dowa, Ntchisi and Lilongwe

VALUE PROPOSITION

**Source Of Content:** Global Hope Mobilization

**Degree Of Localization:** -

**Implementation Experience:** Implementing other mHealth projects since 2011

**Partner Coverage:** Airtel, TNM

**Funding:** None

**Business Model:** Donor

**Success To Date:** Not fully launched yet

**Reach:** 2000 mothers enrolled to date

---

Registration
A mother is registered by a HSA at the HCF on a paper-based register

Reminders
Reminder messages are sent out to the HSAs and the mothers:
Missed/ upcoming ANC/ immunization appointment, and medication reminders

Upload Data to System
HSAs/ data capturers are trained to capture client information from paper-based records to electronic format on the system (excel format)

Client Follow-Up (& Counselling)
HSAs follow-up on a mother who has missed an ANC appointment or who has missed her EDD at the facility (call / visit)

---

Figure 26
NGO-Led Case Study: Millennium Promise

**mHealth Use Case:** CHWs use CommCare app to monitor and track mothers in terms of ANC visits and immunization (Health systems strengthening, health worker empowerment, monitoring)

**Delivery Channels:** SMS, voice, app

**Health Focus:** Maternal and Child Health

**Target Users:** Pregnant women and new mothers

**Geographical Focus:** Zomba district
(Mwandama cluster is located in the southern region of Malawi’s Zomba district)

**PROFILE**

**Source Of Content:** Earth Institute at Columbia University

**Degree Of Localization:** Earth Institute

**Implementation Experience:** Since 2006, with this programme, since 2006 with other countries (Ghana, Kenya, Malawi, Nigeria, Rwanda, Senegal, Tanzania, Uganda in progress) in other MCH areas

**Partner Coverage:** AirTel (all countries, to provide free SMS, data, voice to CHWs)

**Sony Ericson (all countries), United Nations Development Programme, Earth Institute at Columbia University**

**Funding:** Millennium Villages Project - multiple funders and donors

**Business Model:** Donor funded

**Success To Date:** -

**Reach:** 50 HSAs registered

**VALUE PROPOSITION**

**Registration**
A CHW profiles households on an app on her phone
Specific cases (linked to that household) are opened for pregnant women and children under 5

**Client Follow-Up (& Counselling)**
CHW uses her mobile phone to follow-up on a mothers and children

**Data Collection**
There are a number of digital forms which are updated on the application throughout this service

- Pregnant mother (ANC and Post Natal- 6 weeks)
- Children under 1 year (Immunization)

**Birth Registration**
After delivery, a new case is opened for the child (under the same household as the mother)
Aggregator-Led Case Study: VERSE – mWomen

PROFILE

**mHealth Use Case:** A messaging service to empower women with information
**Delivery Channels:** SMS, USSD

**Health Focus:** Women’s health, child care, and other content
**Target Users:** Women
**Geographical Focus:** National

VALUE PROPOSITION

**Source Of Content:** Avallain
**Degree Of Localization:** Localized (language) by VERSE
**Implementation Experience:** Implementing in 19 countries
**Partner Coverage:** Airtel

**Subscription**
User initiates subscription on USSD/SMS by dialling a multimodal code

**Messaging**
Once subscribed, user gets daily alerts on SMS as per her requirements

**Deactivation**
User can deactivate, if he does not need the service anymore by dialing a USSD/SMS code.

**Profile Registration**
User is taken through menu-based options from which she creates her desired profile

**Edit Profile**
A user also has the option to change the profile details on USSD/SMS

Figure 30
NGO-Led Case Study: Malawi MoH – DHIS2 Tracker

PROFILE

**mHealth Use Case:** DHIS 2 Tracker enables you to collect, manage and analyse transnational, case-based data records; Reminder messaging to patients for upcoming clinic appointment

**Delivery Channels:** SMS, calls, apps

**Health Focus:** MNCH

**Target Users:** HCWs updating patient information onto DHIS 2 system

**Geographical Focus:** Piloting in Dowa district

VALUE PROPOSITION

**Source Of Content:** Malawi MoH CCM protocol

**Degree Of Localization:** -

**Implementation Experience:** None

**Partner Coverage:** University of Oslo

**Funding:** -

**Business Model:** Donor/ government

**Success To Date:** -

**Reach:** 30 HCWs currently using service in Dowa district

MALAWI MOH – DHIS2 TRACKER

**Registration**

A mother is registered by a HCW (HSAs, nurses, hospital attendant) at a health facility. The mother’s information is captured in a paper-based register

**Data Collection (ANC)**

Continual data collection takes place at the clinic when mothers come in for ANC service (paper-based medical records)

**Data Entry into Electronic Format**

HSAs are trained to capture client information from paper-based records to electronic format on the DHIS 2 system

They use J2 monitors (touch screens) to do this

Figure 28
MALAWI MOH – DHIS2 COMMUNITYTRACKER

Registration
A mother is registered by a HSA at the mother’s home
The CHW captures the mother’s data into digital forms on an application on her feature phone

Data Collection
There are a number of digital forms which are updated throughout this service by the HSA:
- ANC & post-natal care follow-up for the mother (to be deployed)
- Immunization tracking for the child
- Clinic update form (tracking of visits)

Reminders
Reminder messages are sent out to the HSAs and the mothers:
- Missed/ upcoming ANC/ immunization appointment

Client Follow-Up (& Counselling)
HSAs follow-up on a mother who has missed an ANC appointment or who has missed her EDD at the facility
She updates information on the status of the mother and child pair on her feature phone (linked to HCF)

Birth Registration
After delivery, a new case is opened for the child
Loaded into separate program for immunization (linked to mother)

Figure 29
## Assessment Criteria for mHealth Service Providers

<table>
<thead>
<tr>
<th></th>
<th>Strong Alignment</th>
<th>Medium Alignment</th>
<th>Low Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alignment to Health Area</strong></td>
<td>Directly impacts maternal and child health or nutrition</td>
<td>Indirectly impacts maternal and child health</td>
<td>Does not impact maternal and child health</td>
</tr>
<tr>
<td><strong>Alignment to Use Case</strong></td>
<td>Has both demand generation as well as registration/ data collection use cases</td>
<td>Has either demand generation or registration/ data collection use cases</td>
<td>Does not have either use case</td>
</tr>
<tr>
<td><strong>Alignment to Core Audience</strong></td>
<td>Targeted at rural, poor, pregnant women or new mothers</td>
<td>Targeted at general audience</td>
<td>Little or no alignment to core audience</td>
</tr>
<tr>
<td><strong>Strength of Content</strong></td>
<td>Content validated by ministry and tested in the field</td>
<td>Content is from an approved source but not all formally validated or tested in the field</td>
<td>Content source not yet determined</td>
</tr>
<tr>
<td><strong>Implementation Experience</strong></td>
<td>Relevant deployment experience in named product in country</td>
<td>Relevant deployment experience in named solution in other countries</td>
<td>Relevant health experience but not in named solution</td>
</tr>
<tr>
<td><strong>Breadth of Delivery Channels</strong></td>
<td>Text and voice (can be IVR or call center), and data component in service</td>
<td>Single channel focus</td>
<td>Not determined yet</td>
</tr>
<tr>
<td><strong>Business Model</strong></td>
<td>Charging model in place which allows for some cost recovery from consumer</td>
<td>Funding strategy in place that is dependent on external sources (e.g. donors or government)</td>
<td>Not determined yet</td>
</tr>
<tr>
<td><strong>Partner Coverage</strong></td>
<td>Partnerships from government, health sector and private sector</td>
<td>Partnerships on either the health side or private sector side</td>
<td>Not determined yet</td>
</tr>
<tr>
<td><strong>Availability of Funding</strong></td>
<td>Funding sources to launch the service</td>
<td>Funding sources identified but not secured yet for launch of service</td>
<td>Not determined yet</td>
</tr>
<tr>
<td><strong>Launch Readiness</strong></td>
<td>Ready to launch service within 6 months</td>
<td>Ready to launch service within 12 months</td>
<td>Not determined yet</td>
</tr>
</tbody>
</table>
There is a wealth of useful mHealth experience in both messaging and registration / data surveillance, however business models are largely reliant on grant funding.

### High Level Assessment of mHealth Service Providers

<table>
<thead>
<tr>
<th>Alignment to health area</th>
<th>Village Reach</th>
<th>DTREE</th>
<th>CHAI</th>
<th>UNICEF</th>
<th>Global Hope</th>
<th>Mobilization</th>
<th>Millennium Promise</th>
<th>Malawi MoH</th>
<th>Verse</th>
<th>JSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alignment to core audience</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Strength of content</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Implementation experience</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breadth of delivery channels</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business model</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner coverage</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability of funding</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Launch readiness</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DEMAND GENERATION (HEALTH MESSAGING)</strong></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td><strong>DATA COLLECTION &amp; REGISTRATION</strong></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 32**
mHealth Content Aggregators

Key Observations

Aggregators are crucial to mHealth sustainability in Malawi, but the VAS market is at a relatively nascent stage.

- Operators are largely dependent on VAS providers to provide content and value-added services to drive interest and volume for connectivity.
- Due to the size of the market, aggregator interest in Malawi is limited and focusing more on high value commercial VAS such as ringtones and colour ringback tones.
- Market size and commercial sustainability, in the face of low ability to pay, are key concerns for aggregators to play in this space.

Aggregator Interest in Malawi

There is limited interest in health at the moment, with only one player providing content to AirTel on health.

<table>
<thead>
<tr>
<th>OPERATOR PARTNER</th>
<th>CURRENT FOCUS IN MALAWI</th>
</tr>
</thead>
<tbody>
<tr>
<td>AirTel</td>
<td>Health tips</td>
</tr>
<tr>
<td>AirTel</td>
<td>Managed services</td>
</tr>
<tr>
<td>AirTel / TNM</td>
<td>Infotainment, RH tips</td>
</tr>
</tbody>
</table>

Figure 33
Mobile Network Operators

Key Observations

Mobile operators are targeting rural customers as a means to increase market share, however mHealth not currently seen as a means to reach out to them.

- Operators are targeting rural customers in order to grow their subscriber base, as the urban market is increasingly saturated.
- mHealth can be an important component of rural targeting for mobile operators.
- Feedback from operators suggests that mHealth at present is not a high priority area, unless they can see clear, short term, commercial potential and partners with market-ready products.
- There have been recent moves by the regulator to liberalize the market and drive down mobile costs for the consumer.
- There is an opportunity, at the moment, to define mHealth-friendly regulations in the health sector so that the mobile sector can participate positively in mHealth.

AirTel and TNM are the two major mobile operators in Malawi.
Operators are increasingly targeting low income, rural consumers.

Malawi is still at a very early stage in VAS introduction.

**Figure 35.** Source: Communications Africa, “Malawi Telecoms Players Tap into Rural Market” 2013

**Figure 36**
mHealth can play a part in the introduction of a more targeted rural penetration strategy.

![Diagram of VAS categories](image)

**Figure 37** Source: Gartner Research, mVAS Content Aimed At Rural Masses (2012)

Regulation and government support for mHealth is positive.

<table>
<thead>
<tr>
<th>An overall supportive position on mHealth</th>
<th>Regulators are working to reduce the costs of mobile through sector liberalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success and take up by government of mobile-based registration initiatives such as RapidSMS / UNICEF as well as community-based health support services such as CCPF indicate government buy-in for mHealth</td>
<td>MACRA deregulates mobile market, increasing operators from 2 to 4</td>
</tr>
<tr>
<td>No specific mention of restrictive regulation regarding health advice being delivered over the phone indicates an opportunity for mHealth to be a viable health delivery support channel</td>
<td>Operation of the transmission towers awarded to independent 3rd party</td>
</tr>
<tr>
<td></td>
<td>Recent increases in mobile phone charges more due to inflation rather than failure of liberalization</td>
</tr>
</tbody>
</table>

**Figure 38**
The Potential for mHealth Partnerships

Regulation and government support for mHealth is positive

- Government has deregulated mobile market
- Operation of the transmission towers awarded to independent 3rd party
- Recent increases in mobile phone charges more due to inflation rather than failure of liberalization

Size of Opportunity

<table>
<thead>
<tr>
<th>Scale of MCH/Nutrition problem</th>
<th>Size of addressable population</th>
<th>Ability to pay</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HIGH</strong></td>
<td><strong>LOW</strong></td>
<td><strong>LOW</strong></td>
</tr>
</tbody>
</table>
The Potential for mHealth Partnerships in Malawi

- Regulation and government support for mHealth is positive.
  - Government has deregulated the mobile market.
  - Operation of the transmission towers awarded to independent 3rd party.
- Recent increases in mobile phone charges are more due to inflation rather than failure of liberalization.

### Ability to Deliver

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>mHealth service providers</td>
<td>HIGH</td>
<td></td>
</tr>
<tr>
<td>Strength of supporting programmes</td>
<td>HIGH</td>
<td></td>
</tr>
<tr>
<td>Interest from commercial aggregators</td>
<td>LOW</td>
<td></td>
</tr>
<tr>
<td>Interest from mobile operators</td>
<td>LOW</td>
<td></td>
</tr>
<tr>
<td>Supporting mobile / health regulation</td>
<td>MEDIUM</td>
<td></td>
</tr>
<tr>
<td>Willingness to partner</td>
<td>MEDIUM</td>
<td></td>
</tr>
</tbody>
</table>
Key Observations

• There is significant scope for different players in the mHealth delivery value chain to help each other in scaling up mHealth.

• Aggregating different mHealth service providers into a partner consortium can present a holistic product offering to operators, as well as form a common platform for negotiation.

• The existing goals of most mHealth players in Malawi is to prove impact and value to the public sector, to motivate the government to fund and take on services in the future.

• However, proving the short term commercial viability of mHealth for the private sector remains a challenge, in the face of Malawi’s current economic and demographic characteristics. It may be that commercial mHealth will take longer to take off.
The Potential for Partnership

A multi-stakeholder product map shows the potential for collaboration between health and mobile sectors.

**Figure 39**

*Partners shown here are illustrative and non-exhaustive*
Barriers to Scale

Different stakeholders can work together to address common challenges.

<table>
<thead>
<tr>
<th>Challenge</th>
<th>mHealth Service Provider can help by</th>
<th>Commercial aggregator</th>
<th>Mobile operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of validated, localized, relevant, mobile content</td>
<td>Providing proven, field-tested health content</td>
<td>Working with mHealth players to define format of content which is suitable for mobile</td>
<td>Working with mHealth players to define format of content which is suitable for mobile</td>
</tr>
<tr>
<td>Commercial aggregators and mobile operators lack credibility in the health sector</td>
<td>Working with the commercial sector to provide vital credibility</td>
<td>Partnering with health sector players in rolling out services</td>
<td>Partnering with health sector players in rolling out services</td>
</tr>
<tr>
<td>Lack of clarity around mHealth regulations and standards</td>
<td>Providing input around supportive mHealth regulations on the health side</td>
<td>Providing input around supportive mHealth regulations on the mobile side</td>
<td>Providing input around supportive mHealth regulations on the mobile side</td>
</tr>
<tr>
<td>Connectivity costs which reduce affordability and access</td>
<td>Quantifying connectivity costs as a proportion of their operational costs</td>
<td>Considering alternative business models for health services</td>
<td>Considering alternative business models for health services</td>
</tr>
<tr>
<td>Lack of common short codes which limit reach &amp; ease of use</td>
<td>Coordinating around common shortcode asks to the mobile sector</td>
<td>Supporting common short codes to the health sector to promote reach and scale</td>
<td>Supporting common short codes to the health sector to promote reach and scale</td>
</tr>
<tr>
<td>Lack of sustainable commercial model for mHealth</td>
<td>Being sensitive to commercial considerations for effective private sector participation</td>
<td>Considering alternative business models for healthcare services, including the packaging of health content with other forms of mobile content</td>
<td>Considering alternative business models for healthcare services, including the packaging of health content with other forms of mobile content</td>
</tr>
</tbody>
</table>

Figure 40

Assessment of mHealth Feasibility for Maternal and Child Health and Nutrition

While there is significant capacity and interest within the health sector, near term commercial viability affects greater mobile sector participation at this point in time.

Size of Opportunity
Scale of MCH/Nutrition problem – High
Size of addressable population – Low
Ability to pay – Low

Ability to Deliver
mHealth service providers – High
Strength of supporting programmes – High
Interest from commercial aggregators – Low
Interest from mobile operators – Low
Supporting mobile / health regulation – Medium
Willingness to partner - Medium
Action Plan and Recommendations

Capitalize on health sector momentum

- Assess the availability of credible open-source content for the mHealth community and develop new localized content to address gaps if needed.
- Perform field research on drivers of mobile usage habits to support product development for current / future mHealth service providers.
- Support government M&E efforts, to ensure that mHealth continues to align well with national and regional health goals.

Drive and increase mobile sector interest in mHealth

- Source and drive interest in the mHealth VAS market within the commercial aggregator space; a crucial intermediary in the mHealth value chain.
- Work with mobile operators to develop suitable business models which are aligned to consumer purchase habits as well as institutional interests in Malawi.
### Abbreviations and Terminology

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANC</td>
<td>Antenatal Care</td>
</tr>
<tr>
<td>B2B</td>
<td>Business to Business</td>
</tr>
<tr>
<td>B2C</td>
<td>Business to Consumer</td>
</tr>
<tr>
<td>CCT</td>
<td>Conditional Cash Transfer</td>
</tr>
<tr>
<td>CHW</td>
<td>Community Health Worker</td>
</tr>
<tr>
<td>CHEW</td>
<td>Community Health Extension Worker</td>
</tr>
<tr>
<td>EID</td>
<td>Early Infant Diagnosis</td>
</tr>
<tr>
<td>HISP</td>
<td>Health Information Systems Programme</td>
</tr>
<tr>
<td>HSA</td>
<td>Health Surveillance Assistant</td>
</tr>
<tr>
<td>IBD</td>
<td>Inbound Dialling</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communications Technology</td>
</tr>
<tr>
<td>IVR</td>
<td>Interactive Voice Response</td>
</tr>
<tr>
<td>LGA</td>
<td>Local Government Area</td>
</tr>
<tr>
<td>M2M</td>
<td>Machine to Machine</td>
</tr>
<tr>
<td>M&amp;E</td>
<td>Monitoring and Evaluation</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goals</td>
</tr>
<tr>
<td>MCH</td>
<td>Maternal and Child Health</td>
</tr>
<tr>
<td>MNCH</td>
<td>Maternal Newborn and Child Health</td>
</tr>
<tr>
<td>MoH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>NPHCDA</td>
<td>National Primary Healthcare Development Agency</td>
</tr>
<tr>
<td>NSHDP</td>
<td>National Strategic Health Development Plan</td>
</tr>
<tr>
<td>OBD</td>
<td>Outbound Dialling</td>
</tr>
<tr>
<td>P2M</td>
<td>Person to Machine</td>
</tr>
<tr>
<td>P2P</td>
<td>Person to Person</td>
</tr>
<tr>
<td>PAMI</td>
<td>Pan-African mHealth Initiative</td>
</tr>
<tr>
<td>PHC</td>
<td>Primary Healthcare Centre</td>
</tr>
<tr>
<td>SMS</td>
<td>Short Message Service</td>
</tr>
<tr>
<td>USSD</td>
<td>Unstructured Supplementary Services Data</td>
</tr>
<tr>
<td>VAS</td>
<td>Value Added Services</td>
</tr>
<tr>
<td>WAP</td>
<td>Wireless Application Protocol</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organisation</td>
</tr>
</tbody>
</table>
For more information on GSMA mHealth please visit www.gsma.com