# **Market Sounding Trip Report**

OpenLMIS Sustainability - Phase 2

Spring 2019

# **Executive Summary**

OpenLMIS remains at a critical inflection point as we work toward a future state that reduces its reliance on donor funding. Currently, implementers deploy OpenLMIS in low-income, technology-nascent countries. Over the last several weeks, Resonance conducted in-country interviews in Bangladesh, Vietnam, and South Africa to better understand whether the product would be feasible in middle-income, technology-maturing markets. These countries are meant to serve as analogues to help draw conclusions about operating in similar countries and technology landscapes. In each of the market sounding countries, Resonance tested hypotheses on customer segments, business models, and partnership opportunities.

Our discussions with current and potential partners in each of the market sounding countries made it clear that there are a number of opportunities for growth and expansion, which are noted throughout this document. While having a multitude of possibilities is generally a good thing, how we prioritize these opportunities – balancing current and future product considerations – will be critical. To truly build sustainability, OpenLMIS decision-makers need to consider the viability of opportunities not just based on external interest but also based on fit with the core attributes of the OpenLMIS community, its current operating model, feature sets, and ease of the transition.

Insights from these market sounding visits will serve as just one of several data points that will inform how we collectively explore a conclusive and robust future state plan for OpenLMIS.

**Key Takeaways**

We observed the following high-level themes across the three countries we visited. Please note that these takeaways are based on a limited market survey and are meant to be contributory, rather than comprehensive, helping build a fuller picture for the future state of OpenLMIS.

* ***OpenLMIS can serve a need in middle-income, technology-maturing countries.*** Stakeholders in both government and the private sector were impressed with OpenLMIS as an easy-to-use supply chain solution with global support and robust reporting. Even in more technologically advanced countries, we found that there was interest in the solution and a strong possibility for expansion. Stakeholders were especially interested in the fact that OpenLMIS can add further features and dashboards, allowing it to grow with its userbase. As we have seen over and over again, growth opportunities are abundant and the market exists; in the future state, a governance structure that can harness the revenue growth to fund core maintenance and upkeep is imperative for sustainment.
* ***Development and services support firms are interested as channel partners to OpenLMIS.*** Several companies are already developing product suites that could be enhanced by OpenLMIS. For example, Mezzanine, a for-profit mission-driven information systems company and subsidiary of Vodacom, offers a mobile application for last mile health patient services called Stock Visibility Solution (SVS). Mezzanine is interested in integrating its product offering with an LMIS system to both increase its reach and provide support to vulnerable populations. With Mezzanine’s pricing model, covering all costs through a transaction-based pricing, OpenLMIS core costs would be covered for both new and existing implementations. As a next step, Resonance will create a partnership rubric to compare possible partnership opportunities, such as this one, to understand which will meet the desired future state core attributes discussed during the January workshop.
* ***Middle-income, technology-maturing countries are clamoring for data and technology ownership.*** Similar to our findings during early market soundings in Malawi and Tanzania, government stakeholders in Bangladesh, Vietnam, and South Africa all want locally owned and managed solutions. While the transition of technology implementations to government is a desire of many countries, it is much closer to becoming a reality in more mature landscapes. In these contexts, decision-makers value locally developed and supported solutions, which means that partnerships with in-country solutions providers (e.g., Jembi for South Africa, or elsewhere on the African continent) makes OpenLMIS a more attractive option for usage and deployment.
* ***Training and implementation support is a key component of solution uptake.*** Many interviewees stressed the importance of providing consistent training and support as a crucial component of any technology implementation to ensure user uptake and customer satisfaction. Some companies we spoke with, including Jembi in South Africa, generate revenue by providing implementation support for their technologies. Jeeon, a for-profit Bangladeshi company, works with rural pharmacies and expressed interest in possibly offering OpenLMIS in a suite of services and trainings to those pharmacies. Whether through implementing partners or other channel partners, a critical component of the OpenLMIS future state will be the provision of trainings to ensure necessary local support for customers.
* ***Interoperability and the ability to demonstrate compatibility with existing products is important, particularly in new markets.*** Technology landscapes often encompass a combination of proprietary software, open source software, and varying levels of customization and product ownership. Stakeholders and potential customers need to be confident that OpenLMIS would complement their current suite of products. For instance, Bangladesh has the largest deployment of DHIS2 in the world, as well as implementations of other open source products like OpenSRP and OpenMRS. Questions about these products surfaced in nearly every meeting. To be competitive in any new market, it is important to demonstrate interoperability and if possible, multi-product implementation success.
* ***Private pharmacy implementations are limited and require high volume.*** Independent or single pharmacies are not a market for OpenLMIS in many countries because they likely wouldn’t be able to pay for OpenLMIS unless a basic, off-the-shelf version were to be created and offered at scale. Additionally, in middle income countries such as South Africa, even smaller private providers are more mature than the ideal OpenLMIS customer set. Less mature pharmacy chains with 15-20 stores may be a more viable opportunity. In this model, OpenLMIS would need to create a new, rebranded instance of OpenLMIS, likely with a subscription-based pricing structure.

By speaking with stakeholders in middle-income, technology-maturing countries, Resonance has been able to test hypotheses and understand a very viable country segment that OpenLMIS does not currently operate in. Next steps that come out of this work include building out and formalizing our customer and country segmentation, developing a partnership rubric to compare partnership and channel partner opportunities, prioritizing new markets, and developing a roadmap for market penetration. All of these steps will need to take into account the current operating model as a starting point, and consider the feasibility and ease of the shift from the current to the future state. We will also work closely with the Governance Committee and key stakeholders to ensure all opportunities align with the principles and values of the OpenLMIS community and the financial requirements of its donors.

Lastly, just as the global community is clamoring for OpenLMIS sustainability, so to are in-country stakeholders and potential channel partners and customers. A common refrain from conversations in all three countries was the question about the longevity of OpenLMIS; stakeholders needed assurance of longevity to be willing to take on the solution. Any sustainability road map will need to be realistic and messaged clearly to ease the minds of future customers and partners.

Below, we outline the reasons for choosing Bangladesh, Vietnam, and South Africa as market sounding destinations, and then we discuss high-level insights and opportunities specific to each of the three countries.

# **Country Selection, Purpose, and Stakeholders**

For these market soundings, Resonance targeted middle-income countries that have a more developed technology landscape than the current deployment countries. Additionally, we wanted to explore the possibility for OpenLMIS deployments in countries outside of Africa. Bangladesh, Vietnam, and South Africa all have track records of successful logistics management information system implementations in public and private healthcare, although each country also struggles with income disparity, large rural populations, and poverty.

We posited that middle-income, technology-maturing markets could present opportunities to provide a solution for government to support its transition to ownership of their technologies, opportunities to sell to regional private sector actors with networks of data that they want insight into, and opportunities to partner with mature service providers that could become channel partners for OpenLMIS. Our pre-trip desk research supported this idea and showed middle-income and technology-maturing markets, including Bangladesh, Vietnam, and South Africa, to have the following traits:

* ***Institutions*** – Some functional institutions that may still lack resources and capacities to enforce policies and make evidence-based decisions; with some reliance on external aid.
* ***Infrastructure*** – Established infrastructure with maintenance and expansion plans to address any obstacles.
* ***Workforce*** – Most of the workforce has access to quality education, but some gaps in quality and access still exist.
* ***Business ICT adoption*** – ICT is widely available, and firms of all sizes are likely to have integrated some ICT components into business but may not be capitalizing all potential uses of ICT.
* ***Private sector landscape*** – Established and competitive private sector dominated by SMEs; with trends towards digitization and innovation.

We tested these hypotheses by speaking with a range of stakeholders in each country, including donors, donor-program implementers, technology developers and support providers, humanitarian relief organizations, Ministries of Health, other public sector departments, social enterprises, logistics companies, and pharmacies.

The objectives of these meetings were to:

* Learn about the health and adjacent market supply chain landscapes in these markets, and key innovations related to health, commodities distribution, and logistics.
* Understand each country’s experience with current LMIS implementations, government transitions, best practices, and key learnings.
* “Pressure test” business models as well as explore potential opportunities and partnerships.

Below is a list of the organizations with whom we met. We spoke to a broad range of actors, and interviewees had varying degrees of familiarity with the OpenLMIS. A list of interviewees can be found at the end of this document.

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| Dhaka, Bangladesh: | Hanoi, Vietnam: | Cape Town, Johannesburg, and Pretoria, South Africa: |
| * SoftWorks
* Management Sciences for Health (MSH)
* Directorate General of Family Planning (DGFP)
* Directorate General of Health Services (DGHS)
* Central Warehouse
* USAID Office of Population, Health, Nutrition and Education
* World Vision
* Save the Children
* mPower
* Jeeon
 | * PATH
* CHAI
* World Vision
* Viettel
* VINASA
* Ministry of Health Department of Traditional Medicine
* Ministry of Health Directorate of Information Technology
* Vietnam Logistics Association (VLA)
* Hung Thanh Service Medical Company
* Tran Pacific Logistic Company
* Sigma Pharmacy Company
 | * Imperial Logistics
* Jembi
* PATH
* Digital Square
* Mezzanine
* VillageReach
* JSI
* Africa Resource Centre (ARC)
* Anova Health Institute
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# **Insights & Opportunities: Bangladesh**

In early April, Resonance conducted a dozen interviews over four days in Dhaka, Bangladesh, which kicked off our market sounding visits. SoftWorks, a Dhaka-based technology company and Trusted Partner of OpenLMIS served as our local host and supported our visit by scheduling and accompanying us to meetings. SoftWorks’ coordination in conjunction with Resonance’s contacts enabled us to meet with several divisions within the Ministry of Health and Family Welfare (MOHFW), Management Sciences for Health, USAID, World Vision, Save the Children, and two social enterprises focused on health technologies and data. The section below provides an overview of key insights gathered in Bangladesh and its health technology landscape.

* Bangladesh is open to new health products and has a vibrant and growing economy. While this openness to new systems fosters innovation and adoption, it presents challenges with product saturation, implementation silos, and redundancy.
* “Digital Bangladesh” is part of the political agenda, leading to a strong desire for economic and social advancement. This interest and investment in economic development and digitization helps to remove barriers and fuels motivation for long-term product maintenance. Though it is not always realized, there is an emphasis on pharmaceutical accountability and transparency, as well as ownership and system sustainability. These aspirations seem tied to Bangladesh being on the cusp of becoming a middle-income country.
* The Bangladesh MOHFW is divided into two divisions: the Directorate General of Family Planning (DGFP) and Directorate General of Health Services (DGHS). The LMIS implementation under the DGFP is widely considered to be a great success, which stakeholders attribute to its reporting rates of nearly 100% and penetration throughout the country. Essential to this success is the maintenance package that is included in its implementation.
* Long-standing programmatic support for government health programs does not guarantee success. Even with the Medicines, Technologies, and Pharmaceutical Services (MTaPS) program, coverage under the DGHS eLMIS is still a challenge with only 25 essential medicines being tracked in 15 of 64 districts. There are concerns around the timeline of this program and its deployments. While there was interest from the MOHFW for OpenLMIS to replace this system, it would be unadvisable to interfere with the MTaPS implementation mid-stream.
* Government stakeholders in Bangladesh associate data hosting and storage with success, autonomy, and advancement. The MOHFW stores all of its data at a small data center in Dhaka, which is a relatively recent change from hosting on a U.S. server.
* Humanitarian response is not a viable market for expanding OpenLMIS in Bangladesh. In the city of Cox’s Bazar, there is a strong presence of Save the Children, World Vision, and others, who each use their own global SaaS software to track what is sent and received in the camps. For instance, Save the Children uses Total Inventory Management software, which was built in-house on a Microsoft stack and links to their global procurement. Collaboration would need to start at the headquarters of one of these organizations.

***Potential Opportunities***

* SoftWorks would be a key asset to any future OpenLMIS expansion in Bangladesh, especially within the public sector. SoftWorks created and maintains the Supply Chain Management Portal (SCMP), which houses the country’s LMIS data across the MOHFW. This positions the company well as a trusted technology provider who can guarantee integration with other systems. There are gaps in current LMIS coverage for tuberculosis, immunizations, and cold chain technologies that could be explored.

# **Insights & Opportunities: Vietnam**

Resonance conducted eleven interviews over four days in Vietnam and met with a range of stakeholders including the Ministry of Health, international NGOs, and private companies. These meetings provided a unique perspective into a more developed country than where OpenLMIS operates, and presented Resonance with new ideas, potential partnerships, and topics to further explore. This section provides an overview of the key insights gathered in Vietnam, which will be incorporated into ongoing business modeling and analysis.

* Vietnam is a technology-maturing country, which enables its health technologies to be more high-functioning compared to Bangladesh and sub-Saharan African countries. Vietnam has strong transportation infrastructure and high coverage of internet connectivity throughout the country, creating an opportunity for reliable commodities distribution and data. Its investment in technology, training, and digital transformation strengthens its offerings, with 90% of the ERP systems used in-country developed locally. Vietnam has a robust private sector including many companies that offer off-the-shelf and customized software solutions to other private companies. As a whole, Vietnam’s software sector provides 10 billion in revenue per year and the country aims to go from 400,000 to 1 million local software engineers by 2022.
* Operating as a socialist-oriented market economy, Vietnam’s Ministry of Health currently manages its health commodities and data using software by Viettel – a state-owned telecommunications company. In this landscape, all systems must be compatible with the national database for medicines and compliant with the API standards of the Ministry of Health, and data is required to be housed on local servers. This model is successful in Vietnam, with the country rarely seeing stockouts and having strong visibility into its data.
* The government partnership with Viettel creates a unique landscape in Vietnam, encouraging local development of proprietary software that is endorsed and funded by the government. Given Vietnam’s ability to invest in its own systems and data, open source solutions are not very popular, representing only 10% of software across industries. OpenMRS is used in Vietnam, but similarly to what we heard in Bangladesh, there are often issues with balancing what is prioritized by the global community with custom requests (as well as a latency around enhancements).
* Health logistics management products can effectively transition from large international donors to local implementers to government ownership. As an example, Vietnam’s vaccination registry platform was funded by BMGF, handed over from PATH to Viettel, and is very well regarded. Throughout numerous meetings, stakeholders discussed sustainability and success was often linked to government buy-in, financial support, and adherence to policy.
* Health commodities in Vietnam are split into western and traditional medicines, of which the latter consists of raw materials and powders that can be combined and/or compounded. There are distinct hospitals and clinics for each. Even beyond this, Vietnam’s public sector is vertical, with separate systems across the ministries and departments that seldomly talk to one another. The siloed system does present opportunities to help fill gaps or integrate systems, however breaking into the Vietnamese public sector may be difficult given the existing relationship with Viettel.

***Potential Opportunities***

* In discussions with the Ministry of Health Department of Traditional Medicine, it became clear there was no LMIS in place to monitor and track their commodities. The Ministry staff expressed interest in a solution like OpenLMIS to better monitor their distribution of traditional medicines. They would want to start with a pilot and believe strongly in active transition plans and sustainability, but would need to make sure a solution meets its needs first.
* Viettel expressed an interest in learning more about OpenLMIS and ways in which the parastatal could collaborate with OpenLMIS, particularly around implementing OpenLMIS in other countries. Viettel has operations in sub-Saharan Africa through its subsidiaries and was interested in expanding and deepening its presence.
* Many pharmaceutical distribution companies also own their own pharmacies in Vietnam. The two distribution companies that Resonance met with each own two pharmacies and use a custom add-on to their accounting software to manage inventory, coupled with Excel for reporting. While these organizations are likely too small to pay enough to support OpenLMIS core, there may be opportunities for supporting this industry. For instance, OpenLMIS could target larger companies or find a solution that allows for many small companies to access OpenLMIS at a very low price.

# **Insights & Opportunities: South Africa**

Resonance met with eight organizations in Cape Town, Johannesburg, and Pretoria, South Africa. VillageReach and PATH, both OpenLMIS community members, were our hosts and supported our visit by introducing us to key stakeholders and accompanying us to several meetings. The section below provides an overview of key insights gathered on South Africa and its technology landscape.

* South Africa is an upper-middle income economy with more advanced infrastructure, institutions, private sector, and ICT penetration than current OpenLMIS implementation countries. Though, persistent inequalities across South Africa’s economy and provinces create an uneven landscape. The richest 10% of the population held around 71% of net wealth in 2015, while the bottom 60% held 7% of the net wealth.
* The Department of Health (DoH) manages an overburdened, underfunded public health system that serves the majority of South Africa’s population, while a private health system offers modern, high-quality services primarily to the wealthy. Only about 30% of doctors work in the public sector, while 70% of doctors and the majority of specialists only work in the private sector.
* There are no parallel supply chains, as all health commodities are procured by the South African government. Provinces run their own health systems and have autonomy to choose and implement their own processes and technologies. For instance, four different LMIS systems exist across the nine provinces.
* The DoH prioritizes decision-making through ICT and created an eHealth strategy in 2014 outlining strategies to improve health systems. Four technologies are implemented specifically to support health supply chain management – SVS at the last mile, RxSolution at the facility level, Warehouse Management which links to the Department of Treasury, and RSA Pharma used as a reporting database for suppliers. The goal is for these systems to all talk to each other seamlessly, which doesn’t currently happen.
* The USAID Global Health Supply Chain – Technical Assistance, South Africa program provided technical assistance to the South African government’s DoH and Affordable Medicines Directorate to facilitate medicine selection, health technology assessments, supply chain management, and rational medicine use by establishing a visibility analytics network (including 100+ dashboards that allow inventory tracking from the national to the health facility level) and rolling out an electronic warehouse management system.

***Potential Opportunities***

* A partnership with Mezzanine offers a strong option for OpenLMIS sustainability. Mezzanine offers the last mile solution SVS and is interested in moving upstream to the facility level so is currently interested in partnering with an LMIS solution. Mezzanine will need to be considered alongside other governance and partnership opportunities.
* Jembi offers support services to public and private health clients implementing eHealth solutions. The company will support both Jembi-created and -managed software as well as outside solutions and is well adept at providing support to open source solutions. Jembi could support the OpenLMIS initiative as a channel partner by promoting and offering support services to solution implementations for both public and private sector clients.
* As a social initiative, investment in OpenLMIS could be attractive to corporations or other investors by offering tax credits or points on government tenders in return. Marketing the initiative in this way could attract investment and corporate donations in South Africa and other country contexts. This is highly dependent on tax laws by country.

# **Appendix A: Interviewees**

Below are key points of contacts for each meeting. Note: It was common that 1-8 additional team members (not listed below) from each organization would often join the meeting, particularly at divisions of the Ministries of Health.

***Dhaka, Bangladesh:***

* **Dr. Abu Zahid**, Acting Country Director and Team Lead - Procurement and TB, *Medicines, Technologies, and Pharmaceutical Services (MTaPS), Management Sciences for Health (MSH)*
* **Caroll Vasquez**, Office Director, *Office of Population, Health, Nutrition and Education, USAID Bangladesh*
* **Chandan Z. Gomes**, Director, Program Development and Quality Assurance, *World Vision*
* **Hasan Mahmud**, Executive Director, *Softworks*
* **Mahmud Islam**, CEO & Managing Director, *Softworks*
* **Md. Imtiaz Alam Tanim**, mHealth Implementation Specialist, *mPower*
* **Md. Abdul Malek**, Director (Logistics & Supply) and Line Director (PSSM), *Directorate General of Family Planning (DGFP), Medical Education & Family Welfare Division, Ministry of Health & Family Welfare (MOHFW)*
* **Md. Taslim Uddin Khan**, Director, Drugs & Stores, *Directorate General of Family Planning (DGFP),* *Medical Education & Family Welfare Division, Ministry of Health & Family Welfare (MOHFW)*
* **Dr. Quazi Mamun Hossain**, Technical Officer - HMIS and LMIS, *United Nations Population Fund (UNFPA)*
* **Md. Shamsuz Zaman**, Technical Officer - RH, *United Nations Population Fund (UNFPA)*
* **Martuza Ahmed**, Director of Solution Design & Software Quality Assurance, *mPower*
* **Foyaz Ahmed**, Data Integration Coordinator, *Bloomberg Philanthropies, Data for Health Initiative*
* **Dr. Samir Kanti Sarkar, Dr.**, Director, MIS & Line Director HIS & e-Health, *Directorate General of Health Services (DGHS), Ministry of Health & Family Welfare (MOHFW)*
* **Engr. Sukhendu Shekhor Roy**, Systems Analyst, Management Information System (MIS), *Directorate General of Health Services (DGHS), Ministry of Health & Family Welfare (MOHFW)*
* **Suman Kanti Chowdhury**, Senior Research Investigator, Centre for Child and Adolescent Health
* **Mohammad Golam Kibria**, HIS/M&E Advisor, Research Associate, *MEASURE Evaluation*
* **Md. Humayun Kabir**, Senior Strategic & Technical Advisor for RHIS, *MEASURE Evaluation*
* **Nazat Chowdhury**, Senior Manager, ICT, *Save the Children*
* **Rubayat Khan**, CEO, *Jeeon*

***Hanoi, Vietnam:***

* **Tuan Ngo**, Asia Regional System Administrator, HIS Lead*, PATH*
* **Dang Ngo**, Vice President for Southeast Asia, *Clinton Health Access Initiative*
* **Emmanuel Selvanayagam**, Director of Strategy, Public Engagement & Communications, *World Vision*
* **Dan Mtonga**, Program Quality and Resource Development Director, *World Vision*
* **Khong Van Dong**, Director of Healthcare Business Unit, *Viettel*
* **An Ngoc Thao**, Director, *Vietnam Software & IT Services Association (VINASA)*
* **Do Dang An**, Official in charge of Health Partnership Group, *Ministry of Health Department of International Cooperation*
* **Mr. Tranh**, Director/Head, *Ministry of Health Department of Traditional Medicine*
* **Ms. Nu**, Director of IT Center and Head of Software, *Department of Information and Technology, Ministry of Health*
* **Nguyen Tuong**, Senior Advisor, *Vietnam Logistics Business Association (VLA)*
* **Luu Van Hoang**, Pharmacist and Director, *Hung Thanh Health Service Co., Ltd.*
* **Nguyen Van Tuan**, General Operator, *Trans Pacific Logistics Co., Ltd.*
* **Mr. Thanh,** *Sigma Pharmacy Company*

***Cape Town, South Africa:***

* **Dr. Iain Barton**, Executive Vice-President, Healthcare, *Imperial Logistics*
* **Dr. Chris Seebregts**, CEO, *Jembi Health Systems*

***Johannesburg and Pretoria, South Africa:***

* **Craig Usswald**, Director, Supply Chain, *VillageReach*
* **Carl Fourie**, Senior Technical Advisor, *Digital Square*
* **Anzel Schonfeldt**, Country Director, *PATH*
* **Dale Sandberg**, Health & Social Innovation Specialist, *Mezzanine*
* **Rajeev Batohi**, Consultant, South Africa Lead, *Africa Resource Centre*
* **Bashier Enoos**, Senior Technical Advisor, *Anova* *Health Institute*
* **Tony Odendaal**, Procurement Manager, *JSI*
* **Manyobvo Machipanda**, Technical Advisor, *JSI*

# **Appendix B: Acronyms**

Below are common acronyms used throughout this document for reference.

* **DGFP**: Directorate General of Family Planning
* **DGHS**: Directorate General of Health Services
* **DoH**: Department of Health
* **LMIS**: Logistics management information system
* **ICT**: Information and communications technology
* **MOHFW**: Ministry of Health and Family Welfare
* **MTaPS**: Medicines, Technologies, and Pharmaceutical Services
* **NGO:** Non-governmental organization
* **SCMP**: Supply Chain Management Portal
* **SME**: Small and medium-sized enterprise
* **SVS**: Stock Visibility Solution
* **USAID**: United States Agency for International Development