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Opportunities to Transform Public Health Supply Chains in Developing Countries using Decision Support Systems

Executive Summary

November 2019



The Decade to Deliver

As we approach the fifth year of the post-2015 Sustainable Development Goals the UN reports that we are not on track to achieve them. In the words of Secretary-General António Guterres, “*we must inject a sense of urgency*”¹ in advancing these goals. The third Sustainable Development Goal on health and well-being sets out ambitious targets around dramatically reducing maternal mortality, newborn and child mortality, deaths from neglected diseases and more.






There is a critical need to strengthen public health in developing countries (PHDC) by investing strategically in innovation and technology that will improve their performance. We now have a wide range of effective and life-saving health products to help us meet these goals, but these products will not reach those who need them without a well-functioning, transparent and efficient supply chain to deliver them.

The supply chain is inherently complex, and decision-makers constantly manage the risk that medical products will not be available when and where they are needed. **Decision Support Systems (DSS) are computer-based systems or subsystems that enhance the ability to use data to identify where decisions need to be made and to assist in making them.**² They have the potential to reduce the burden on decision-makers and help overcome challenges in using data and analysis in decision-making.

To identify the opportunities and understand the path to DSS implementation this study engaged over 45 stakeholders for in-depth interviews and received additional input from 160+ survey respondents. In addition, the research team completed a rapid review of DSS use cases³ in healthcare across developed and developing countries, resulting in a catalog of over 150 real-world examples.

Benefits of DSS

DSS bring substantial benefits to supply chain performance. DSS are essential for visualizing the current situation, predicting future outcomes, connecting decision-makers with data sources across the supply chain and adjusting and optimizing supply chain functions. Specifically, there are five key benefits for DSS solutions to improve supply chain performance:

-  1. Connect and Integrate
-  2. Sense and Predict
-  3. Observe and Describe
-  4. Learn and Adapt
-  5. Optimize and Automate

By deploying DSS solutions which use one or more of these mechanisms, each DSS component can directly improve decision-making where it is used. These benefits accumulate and as more DSS are used across the supply chain, the overall system becomes more streamlined, more reactive and asset-light. This is a result of DSS making better-informed decision-makers, establishing additional decision-makers, creating more choices and increasing the options for a given choice.

Transformative opportunities

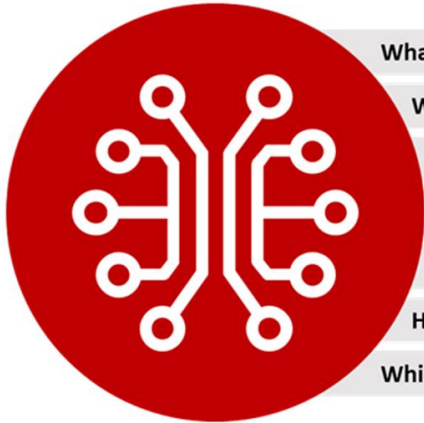
DSS solutions can be widely leveraged across the supply chain and the area of greatest impact will depend on the specific supply chain’s maturity and improvement priorities. However, we have identified 7 key PHDC supply chain questions and 7 investment-ready opportunities for DSS to help answer them:

¹ Cited in Green 2018

² Adapted from Power 2019

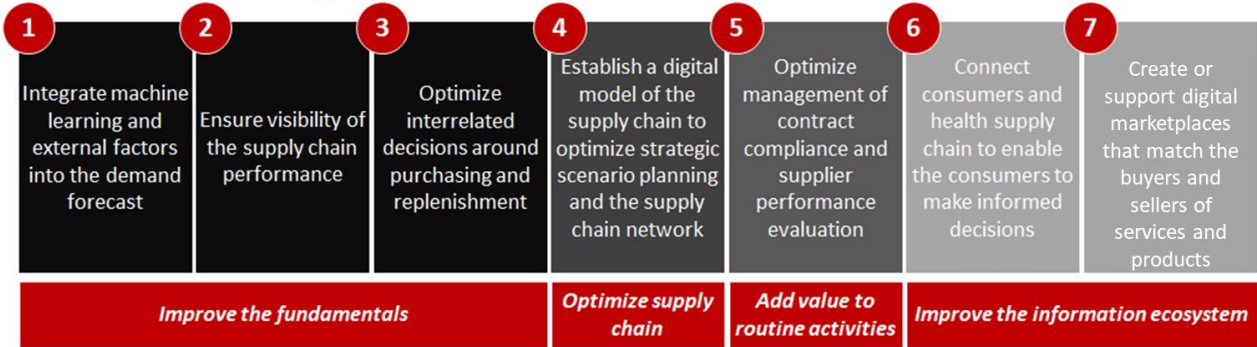
³ We define use cases broadly as the way a user leverages technology within a specific context.

Top Supply Chain Questions for DSS



- What will the demand be?
- What is the current state of the supply chain?
- When and how much should I purchase and how much do I need on hand?
- How should the supply chain be structured?
- How are my suppliers and contracts performing?
- How can consumers make better decisions?
- Which product supplier should I use?

Investment-Ready DSS Opportunities



Guiding Principles for DSS

Despite the many challenges, the number and variety of successful projects show that success is possible. There are many paths to success, however, this research has found four broadly applicable guiding principles for implementing DSS in PHDC:



The DSS should ideally deliver value to all stakeholders, including patients, clinicians, data collectors, government and donors

The DSS should be easy to adopt for all stakeholders

The value of DSS is maximized if data and results can be shared across the supply chain to enhance end-to-end collaboration

A plan for the long-term sustainment of success is essential

Call to Action

For supply chain professionals, the most important step in the DSS journey is to begin systematically using data in decision making. Small steps contribute to the cultural shift toward using data in decision making, trusting DSS type systems, and creating the incentive to collect good data.

While supply chain professionals are central to driving DSS uptake, actors beyond the supply chain also have a key role:



Governments have a mandate to drive change and must shape the information ecosystem in a way that allows DSS uptake.



Funders can provide the resources required to make targeted investments in DSS that help to drive iterative improvement in PHDC supply chains, combine investments in state-of-the-art data collection with state-of-the-art DSS and contribute to the information ecosystem by creating incentives for interoperability.



Software Development Organizations have an important role in ensuring the interoperability of their systems and, wherever possible, sharing with the global community.



Implementing partners have a key role in managing the DSS change journey and ensuring that DSS investments are as effective as possible by managing the parallel process and organizational change.

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