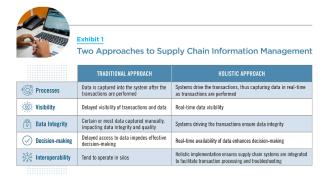# BRIDGING THE SILOS OF SUPPLY CHAIN INFORMATION SYSTEMS THROUGH A HOLISTIC MATURITY MODEL

Global health supply chains are growing in complexity as they respond to changing patterns of commodity flows and demands for more accurate information in an increasingly digitized world. Information systems, which form the backbone of today's supply chains, must mature in order to manage the growing complexity. As physical commodities move through supply chains, information systems enable the flow of commodity data, ensuring that medicines move from manufacturer to national warehouses to health facilities and, finally, to end users. Weak information systems can hinder effective response to supply chain exceptions, such as stockouts and expiries, as well as efficient procurement and distribution of health commodities.

HOLISTIC APPROACH

Traditional approaches to improving supply chain information systems (SCIS) tend to have a narrow scope. They might focus on one health area, such as HIV, or a specific operational component, such as warehousing. A holistic approach, on the other hand, enables informed decision making by government, donors and implementing partners to improve overall SCIS functionalities in a coordinated way.

The USAID Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM) project has developed one such approach, the **Supply Chain Information System Maturity Model (SCISMM)**, to help countries analyze their current supply chain systems holistically and plan their SCIS investments.

Exhibit 1
Two Approaches to Supply Chain Information Management

	TRADITIONAL APPROACH	HOLISTIC APPROACH
Processes	Data is captured into the system after the transactions are performed	Systems drive the transactions, thus capturing data in real-time as transactions are performed
Visibility	Delayed visibility of transactions and data	Real-time data visibility
Data Integrity	Certain or most data captured manually, impacting data integrity and quality	Systems driving the transactions ensure data integrity
Decision-making	Delayed access to data impedes effective decision-making	Real-time availability of data enhances decision-making
Interoperability	Tend to operate in silos	Holistic implementation ensures supply chain systems are integrated to facilitate transaction processing and troubleshooting

Source: Chemonics International

While SCISMM has been developed in the context of public health supply chains, it was designed with core supply chain principles in mind, including the Supply Chain Operations Reference (SCOR) Model and the American Productivity & Quality Center (APQC) Framework. With the maturity model, SCIS capabilities such as planning, order management and warehouse management, as well as foundational capabilities like data management, have been categorized across five maturity levels. Each level defines the extent and maturity of system capabilities. The model also provides pre-requisites for each maturity level and an ability to develop baselines and measure improvements as systems mature.

THE MATURITY MODEL IN PRACTICE

SCISMM can be used to assess the strengths and weaknesses of SCIS that countries use. Based on the assessment, recommendations for improvement will be defined based on a country's goals, priorities and constraints. These recommendations can be used to develop implementation roadmaps, which feed into annual national strategic plans to ensure planned initiatives receive adequate investments. This will help steer investment into the most needed areas, which is critical for the often resource-constrained public health sector.

Here are three examples of the maturity model in practice:
- In Pakistan, SCISMM was used to identify how deeply certain capabilities had been deployed in order to determine which features needed further implementation support and where new capabilities needed to be developed instead.
- Similarly, in Nepal, the maturity model was used to evaluate gaps between ongoing and planned supply chain systems and processes. The model was then applied to develop a tailored plan for prioritizing future information system capabilities.
- In Rwanda, GHSC-PSM facilitated a SCISMM assessment for the Ministry of Health to analyze the country's national SCIS. The assessment identified important gaps, including lack of standardized product master data management. Based on this 2019 assessment, the Rwandan government chose to prioritize foundational system capabilities such as master data management and analytics and approved implementation of a National Product Catalog for health product master data management.

AN IMPROVED SCISMM

SCISMM aids supply chain actors, including governments, donors and implementing partners, to plan and strategize around future SCIS investments to enhance supply chain functionality. The model can be used to evaluate current capabilities or develop tailored roadmaps for implementing SCIS, as in the case of its application in Pakistan, Nepal and Rwanda.

Throughout 2020, GHSC-PSM continued to revise USAID's SCISMM based on these country assessment experiences, and other countries' use cases. The revised version of the SCISMM was developed in collaboration with the members of the Maturity Model-Small Working Group, a sub-group of the Digital Health and Interoperability Working Group. GHSC-PSM collaborated with the Carolina Population Center of the University of North Carolina under the Digital Square project to review other health information system (HIS) maturity models such as HIS Stages of Continuous Improvement and HIS Interoperability Maturity Toolkits and to align SCISMM appropriately. Based these collaborative improvements, USAID GHSC-PSM published SCISMM version 2.0 in March 2021 and is available here. For further details on SCISMM, please see this blog.

"The SCIS maturity model was very useful in shaping results of the assessment of public health supply chain information systems in Rwanda."
- **Vincent Sabagirirwa**
USAID GHSC-PSM Management Information Systems Advisor, Kigali, Rwanda

"The USAID GHSC-PSM project is providing us support on supply chain system strengthening, information systems and capacity. We are pleased that GHSC-PSM has introduced us to SCISMM. This will help us to assess our systems and enhance them on international guidelines."
- **Dr. Niaz Muhammad**
Director General of Health Services, Health Department, Khyber Pakhtunkhwa, Peshawar, Pakistan