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Supply Chain Management Newsletter

Men loading boxes onto a truck in Indonesia.

Purposefully determining how supply chain integration and product integration could strengthen a supply chain will help supply chain managers determine the best ways to strengthen their system.

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Welcome to the Quarter 1, 2010 installment of the quarterly USAID | DELIVER PROJECT Supply Chain Management E-Newsletter. The e-newsletter includes articles on supply chain best practices, public and private sector supply chain technology, project topics, and descriptions and evaluations of pilot programs. The e-newsletter is also available on the USAID | DELIVER PROJECT website at www.deliver.jsi.com under Resources>Publications>Logistics Briefs and Success Stories>Supply Chain Management E-Newsletter: Quarter 1, 2010.

The team welcomes your input! To submit an idea for a future newsletter, or to share information with our readers, please contact Kelly Hamblin, Program Officer, at khamblin@jsi.com.

Integration and Public Health Supply Chains

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Supply Chain Segmentation: An Application in Nigeria

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lessons learned. See the full article below.

Procurement & Supply Management (PSM) Toolbox Update
The Procurement & Supply Management Toolbox website (http://www.psmtoolbox.org) is a WHO / AMDS repository of tools for health professionals, medical and pharmacy students, and consultants working on PSM and several health/pharmacy related areas worldwide. The database contains 178 English and 58 French PSM tools and resource documents for ARVs, TB & malaria medicines and several other health commodities. See the full article below.

Integration and Public Health Supply Chains

The concept of integration has been discussed extensively in recent years. Many are of the opinion that integration offers opportunities for decreasing redundancies within global health. A recent publication on the implementation of the U.S. State Department's Global Health Initiative states:

> Integrating health services at the point of contact ensures the delivery system is designed to meet the holistic needs of an individual when they go to a health facility. Upstream integration ensures the joint programming among U.S. government agencies, other donors, and partner country governments and other institutions to increase efficiency and effectiveness.

How does this concept affect the field of public health supply chains? Ministry of Health officials are encouraged to reduce redundancies and make their health systems more efficient. As health care facilities move toward an integrated basic health care package, the associated products required to provide those services will need to be similarly available. And as vertical/disease-specific programs begin to be offered at the same facility, there is opportunity for streamlining their supply chains as well.

The USAID | DELIVER PROJECT approaches integration from two angles. The first, which many program managers are already familiar with, has been termed product integration. This is where the management of some or all logistics functions is combined in the same supply chain for different commodity categories. For example, in Ghana, contraceptives, antiretrovirals (ARVs), and essential drugs are stored together at the central medical stores and delivered together to facilities. Program managers should consider merging supply chain functions and products with those that have similar product characteristics and service requirements.

An approach to achieving product integration purposefully is a framework called segmentation. Because public health supply chains manage a wide variety of products, a one-size-fits-all supply chain can not effectively manage all products efficiently. Products that may have specific supply chain needs (e.g., ARVs) should not be managed in the same way as products that have less complicated supply chain requirements (e.g., condoms). If both types of these products are managed in the same way, valuable resources could be wasted: condoms would be overserved by being provided with the same special treatment that ARVs need (more frequent and extra security). Alternatively, ARVs may expire while being underserved in a leaner

supply chain with long pipelines or infrequent delivery. An explanation and brief country example on segmentation is addressed in this newsletter (See below: *Supply Chain Segmentation: An Application in Nigeria*.)

However, while striving for greater efficiency, objectives in supply chain performance and product availability are equally important. In the private sector logistics world, supply chain integration means striving for seamless linkages between the different levels, organizations, and functions within a supply chain to maximize customer service (product availability) based on the resources available. This means that the organizations that form the supply chain, including levels/units within those organizations, share a common vision, understand each other's needs, share information, and are explicitly aligned to meet the ultimate customers' needs.

This form of integration, which is called supply chain integration, is one in which there is visibility of information and activity up and down the supply chain, with a streamlined process and greater coordination and predictability of demand between all levels of the system. Thus, this form of supply chain integration also improves efficiency and reduces redundancy, improving product availability while lowering cost.

These two types of integration complement each other well. While supply chain integration improves performance, product integration may be necessary to address complexity and redundancies in existing supply chains. With multiple funding sources, suppliers, government stakeholders, program managers, and reporting requirements, as well as a breadth of programs with different objectives, there is no doubt that many health systems could benefit from an exercise in purposeful product integration, which can be done by applying the segmentation framework. However, such an exercise may be necessary but not sufficient in guaranteeing good supply chain customer service. Simply merging two programs' supply chains does not necessarily guarantee product availability and improve customer service. Supply chain integration, on the other hand, can provide the visibility and incentives necessary to manage that complexity, while retaining the objective of product availability.

Purposefully determining how supply chain integration and product integration could strengthen a supply chain will help supply chain managers determine the best ways to strengthen their system. There is no one-size-fits-all solution to strengthening a supply chain. Programs should consider these concepts in the context of their own supply chain and determine what is best suited for them. For more detailed information on the concepts of both types of integration, refer to the USAID | DELIVER PROJECT document *Putting Integration into Perspective: Proven Practices to Strengthen Public Health Supply Chains*.

Supply Chain Segmentation: An Application in Nigeria

What is supply chain segmentation?

Supply chain segmentation is a framework for organizing an entire supply chain, in terms of the products handled and customers served, into distinct groupings or segments based around shared logistics requirements. This is done in order to identify strategies best suited to those requirements, including any or all of the basic logistics functions: procurement, warehousing, inventory, or transportation. For example, a grocery store chain might use segmentation to decide that its fresh produce and canned goods should be separated into distinct product groups, given that the two types of products have different handling requirements. From there, the grocery store might decide to develop separate transportation strategies catered to those requirements, sending fresh produce to its stores in daily shipments on refrigerated vehicles and canned goods on weekly shipments. In this way, segmentation helps the grocery store chain account for the fact that "one size does not fit all" when it comes to supply chain strategies—that one system cannot effectively handle a diverse group of products and customers with a single strategy.

How can segmentation be applied to public health supply chains?

Similar to a chain of grocery stores, a public health supply chain handles numerous products with a diverse range of logistics requirements and goals. A Ministry of Health (MOH) may need to provide both antiretrovirals—a product with high value, low volume, and short shelf life—and male condoms—a product with low value, high volume, and long shelf life—to each service delivery point customer it serves, as well as a whole range of other products with distinct handling requirements and demand characteristics. At the same time, an MOH may serve a range of different customers, from rural facilities with limited access to transportation but small demand, to large urban hospitals with a large demand for a higher number of products. Segmentation can be used to identify which of those many products can be managed under the same strategy, and which require a separate one. Additionally, the MOH may decide to create segments based on the different customer needs.

To apply this theory to a real-world setting, Technical Advisors from the USAID | DELIVER PROJECT conducted segmentation exercises in Kano and Edo States in Nigeria. For these exercises, the advisors first assessed stakeholder interest and worked with MOH officials to identify potential framing questions and scopes. In both states, the MOH wanted to know if segmentation could be used as a framework for system improvements. In the second visit, the advisors continued to narrow the scope of the exercise and began collecting data. In both states, the activity focused on the requisitions from secondary hospitals for essential medicines from the State Central Medical Store (SCMS). This particular set of data was chosen as a good starting point for a segmentation activity because it would give an accurate depiction of the actual customer demand, and because "essential medicines," as a category, already contains a wide variety of products. Together with several available sources of requisition information related to vertical programs including family planning, the Technical Advisors analyzed this data set along the following characteristics:

Products:

- frequency of order
- volume in m3 (per unit and total)
- variance in volume ordered
- product value.

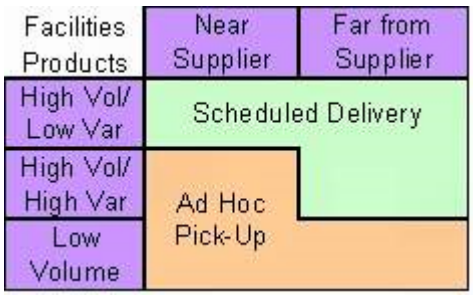
Customers (Secondary Hospitals):

- frequency of order
- volume in m3 requested
- physical distance from supplying facility.

In a third and final visit to Kano and Edo States, the Technical Advisors presented these results to MOH representatives. Using the framework of segmentation, the logistics characteristics of volume and variance of volume were chosen to define the product groupings, while the customers were broken down according to their physical distance from the supplying facility.

Outcomes

After presentation of these results, workshop participants selected potential transportation strategies that could effectively serve the product and customer segments. One possible arrangement of these strategies for Edo State's essential medicines program is as follows:



In this potential arrangement, all products ordered in high volumes with low variance could be transported from the SCMS to the secondary facilities using a scheduled delivery system. At the same time, customers could come to the SCMS to pick up low-volume products on an ad hoc basis. For products ordered in high volumes with high variance of demand, customers inside Benin City (very close to the SCMS) could arrange for transportation themselves, while customers outside the city may require scheduled delivery from the SCMS.

After creating these segments for essential medicines, workshop participants discussed the possibility of adding products currently contained within vertical programs to these segmentation arrangements. Based on the analysis, the Technical Advisors found that certain vertical program products followed similar ordering patterns to essential medicines products. For example, boxes of 100 male condoms exhibited similar ordering patterns to boxes of latex gloves, in terms of the total volume requested and the variance of those requests. Because of these shared characteristics, the boxes of 100 condoms could be placed in same segment as latex gloves and fall under the same transportation strategy.

By allowing for the integration of certain vertical program commodities, supply chain segmentation can help to reduce operational redundancies and improve overall efficiency. Under a segmented approach, products such as male condoms and latex gloves can share supply chain resources such as warehousing and transportation. Most importantly, however, segmentation ensures that this product integration occurs rationally. While male condoms and latex gloves exhibit similar logistics characteristics and ordering patterns, vaccines (a cold chain product) or artemisinin based combination therapy (ACTs) (a seasonal, lower volume product) would probably not share the same transportation resources effectively. In addition to improving efficiency, segmentation can also improve performance and product availability by making sure that supply chain strategies are aligned with the requirements of the products and customers they serve. For example, segmenting customers in terms of their access to transportation resources can help ensure that limited resources at the supplier level are deployed where they are most needed. In the potential segmentation arrangement above, Edo State can reserve transportation resources for the products and customers that have the highest need for scheduled deliveries from the supplier: high-volume products going primarily to customers further from the SCMS. As an overall approach, supply chain segmentation allows for both increased efficiency and increased product availability by ensuring that products and customers are efficiently served by strategies that cater to their critical logistics requirements.

Supply Chain Software Tools Survey Results

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The supply chain and logistics management landscape is changing rapidly, and information technology is no exception. Not so long ago, information flow and accuracy were often overlooked, as they were deemed not so important, and most problems in the system could be hidden with high levels of inventory and the slowness of operations. Things have changed dramatically, and much more attention is being given to the visibility of data, end-to-end supply chain integration, and alignment of goals and processes throughout the supply chain. As technology and management approaches evolved, software applications have become more and more prominent.

What solution are you using?

The survey information was obtained mainly through several interviews with country team members and users who provided detailed and rich information on the software tools used in supply chain and logistics management. The survey asked questions on features and functionalities of the software in use. It also inquired about who the users were and whether the software tools met their expectations, as well as whether it was useful in the performance of their duties. Ultimately, a successful and sustainable information system depends on satisfied customers, the users. The functionality section of the survey was divided into six sections:

- forecasting and demand planning
- procurement management
- inventory management
- warehouse management
- order management
- transportation management.

These software tools were used to manage mainly family planning products, HIV/AIDS drugs and test kits, products for the prevention and treatment of malaria and tuberculosis, and laboratory supplies.

The Findings

Fifteen countries participated, identifying 24 supply chain software tools in use, covering six different functionalities. Participating countries included the following: Bangladesh, El Salvador, Ethiopia, Ghana, Malawi, Mozambique, Nepal, Nicaragua, Nigeria, Paraguay, Rwanda, Tanzania, Uganda, Zambia, and Zimbabwe.

The table below lists the top four software tools in use in the countries surveyed:

Supply Chain Software Tool	Main Functionality	Number of Countries
PipeLine	Forecasting and demand planning; procurement management	12
Quantimed	Forecasting and demand planning	5

ProQ	Forecasting for HIV tests	3
Supply Chain Manager	Inventory management	3

Of the remaining 20 software applications, 17 were developed locally and are applied uniquely in the country where developed. Two of these county-specific software applications are highlighted below to provide a sample of what the survey data offers.

The web-based Logistics Management and Information System developed by the USAID | DELIVER PROJECT–Bangladesh office makes good use of new program languages such as Java and SQL, allowing access to stock status in multiple facilities and verifying on time reporting rates via the Internet. It provides real-time information for better decision making. Using the same platform, the Bangladesh team developed its own inventory management system for use at the central medical store and at the Upazilas (districts). Other features are FEFO (first expiry first out) management, stock in/out and adjustments, multiuser access and profiles, and built-in security and backup systems. It also provides easy interface capability.

Another example of modern program languages being used is the Ethiopia Health Commodity Management Information System (EHCMIS), a user-friendly facility-level inventory management system developed by the USAID | DELIVER PROJECT–Ethiopia. The EHCMIS can run in Windows XP operating system or above (Windows Vista, Windows 2008 server, Windows 7) and can handle very large databases as it uses Microsoft SQL server express version; there are no run-time license fees existent on the commercial version. The programming phase was completed in record time and was very cost-efficient, thanks to using the new object-oriented program language Microsoft C# 2008 and to the hard work of our colleagues in Ethiopia. Some of the features are the dynamic color-coded inventory information (min/max; excess; stock out; expiration date tracking by batch; picking list by FEFO; bin locations; facility-level stock transfer; multiuser access and profiles; stock-receiving by purchase order; easy export features to Microsoft Excel and HTML; and packaged with good reports, graphs, and charts. Implementation of the EHCMIS has begun with several hospitals and health centers already using the software. Plans are in place for the development of a companion warehouse management system.

If you would like to learn more about the results of the software survey, please email AskDeliver@jsi.com

You can find more information on the software tools PipeLine, ProQ, and Supply Chain Manager, all developed by the USAID | DELIVER PROJECT on the website http://deliver.jsi.com. For information on Quantimed tool please visit www.msh.org.

PSM Toolbox Update

The Procurement & Supply Management Toolbox website (http://www.psmtoolbox.org) is a WHO / AMDS repository of tools for health professionals, medical and pharmacy students, and consultants working on PSM and several health/pharmacy related areas worldwide. I+solutions is the implementing partner contracted by WHO/AMDS. The database contains 178 English and 58 French PSM tools and

resource documents for ARVs, TB & malaria medicines and several other health commodities. Links to tool translations into Arabic, Chinese, Portuguese, Spanish, and Russian have been mentioned where available.

The website has recently been updated and now includes:

A) The following PSM areas for tool selection:

- Policy
- Selection
- Quantification
- Procurement
- Pricing
- Storage (NEW!)
- Inventory management
- Distribution (NEW!)
- Use
- Quality Assurance
- Monitoring and Evaluation
- Capacity building

B) Malaria and TB-related PSM tools in addition to HIV and AIDS related resources. The latest tool updates concern the " The WHO Rapid Advice- ART for HIV Infection in Adults and Adolescents, 2009" and the "WHO Guidelines for the Treatment of Malaria, 2 nd edition, 2010."

C) A PSM training calendar for 2010

If you want to propose a tool for inclusion in the database, you can do so using the following link: http://www.psmtoolbox.org/en/submit-a-tool.php

An offline version of the PSM Toolbox to be used without Internet connection can be ordered free of charge. If you would like to receive a Toolbox USB stick, please send an e-mail to cmorris@iplussolutions.org or habiyamberev@who.int. For comments and questions you can use the same e-mail addresses.

The authors' views expressed in this publication do not necessarily reflect the views of the U.S. Agency for International Development or the United States Government.

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