MBA Student Case Competition

Phase I Packet

KRANNERT
SCHOOL OF MANAGEMENT
PURDUE
UNIVERSITY

Event Theme

"Unleashing the Global Supply Chain"

February 2011

MBA Case Competition Details Phase I

"Unleashing the Global Supply Chain"

MBA schools from across the US and abroad have been invited to have student teams compete for prizes based on their analysis and presentation of an executive level case for our 6th annual global supply chain conference and case competition. This year's competition will consist of two phases; the 1st phase which will serve as virtual and elimination round, and the 2nd phase for *invited finalist teams only*. The 2nd phase will provide new case materials to build on the 1st phase case materials and presentation. All invited teams will be competing in front of the main conference attendees, and industry judges. **A team consists of ONLY 4 team members attending the event.**

Competition Details:

- Phase 1 case will be released to all confirmed registered teams no later than 5PM EST Friday, January 14th 2011.
- Phase 1 will be judged on each team's submission of a PowerPoint presentation. There is no limit to the length of the presentation, however no attachments or links will be allowed. Also, the presentation **should not include any logo or reference to your respective school; instead it should only include your assigned team number**.
- Completed phase 1 presentation materials must be sent to gscmi@purdue.edu, by **8AM EST TUESDAY, January 18h 2011.** Any presentations received after the 8AM deadline will be forwarded back to the sender informing them that they missed the entry deadline.
- Winning teams from the phase 1 round will be notified via email Wednesday, January 26th, 2011. Winning teams will be invited to compete in the final phase competition being held on February 11th.
- **Confirmation must be received from the invited teams of their intent to compete in the final round by 8 a.m. EST, Monday, January 31st, 2011.** The confirming email must be sent to gscmi@purdue.edu, with the team name and "Attendance Confirmation" in the subject line. We also ask that each confirming team attach the resumes for each competing team member with your confirmation email. Submitted resumes will be shared with our industry attendees, and offers a great networking/job search opportunity for the visiting teams. Resume submission is a courtesy offering for participating teams. Late resume submittals are not accepted however, and requests for resume withdraws once submitted cannot be accommodated due to constraints with printing deadlines.

For more questions regarding Phase 1 of the case please contact Alex Almeida at:

aalmeida@purdue.edu

Thank you

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MBA/Masters

Case Competition Phase 1

Case

Managing Health Care Supply Chains in Gombala

February 2011

Case written by: Professor Ananth V. Iyer

Susan Bulkeley Butler Chair in Operations Management
DCMME/GSCMI Center Director
aiyer@purdue.edu

Krannert School of Management
Purdue University, West Lafayette, IN 47907

This case was written by Professor Ananth Iyer, Susan Bulkeley Butler Chair in Operations Management at the Krannert School of Management, Purdue University. It is meant solely as a vehicle for teaching, learning and class discussion. The data and details provided in the case are completely fictitious.

Managing Health Care Supply Chains in Gombala

Gombala – the country context

Gombala is a country with a population of about 8 million people. The country can be divided into three regions – an urban core region with 4 million people centered around the capital city of Gomba, and two regions – the Eastern and Western regions – each with 2 million people spread out over a rural region. Gombala has a rich cultural heritage and an archeological and paleontological history spread over several centuries. Recent cave finds suggested that further exploration may well establish it as the cradle of all mankind and force a revision of existing theories regarding the development of man.

The economic realities of Gombala were stark, with the per capita GDP putting the country in the group of five that were at the bottom of the global list. With such a poor income stream, modern health care was virtually absent – unless donors provided the funds, medicine and equipment. In practice, around 90% of health care funding was provided by donors. Despite such efforts, infant mortality (survival until age 5) was about 25% for Gombalans – a shocking figure for most of the rest of the world.

Given its location, Gombala faced severe rains during four months of the year and intense heat for another four months. During the other four months there were some periods of freezing rain and some snow on occasion, especially at the top of the mountains. This mixed climate created a significant level of biodiversity and the country had been known to generate puzzling specimens of plant and animal life that was a source of intense interest amongst botanists and biologists. Apart from the varied plant and animal life, the weather patterns also generated a veritable cauldron of bacteria and viruses – and that too provided a complex problem for the 200 or so trained doctors (for 8 million people) in the country.

Nick and Global Health

Nick Van DeCamp wheeled his bike into the elevator and pulled into his office. He parked his bike, pulled off his helmet and sat down, feet up on his desk staring out the window at the mountains surrounding him. Boulder, Colorado was a haven for the earth friendly, global traveler that Nick was – his NGO – Global Health (GH) had earned a reputation for respecting the needs of the countries it operated in and negotiating the intricacies of donor constraints.

Nick was focused on Gombala for the next few months – and his partner in his efforts was the Head of the Ministry of Health in Gombala – Adbou Diallo. Adbou, as he preferred Nick call him, was passionate about improving health outcomes in Gombala and determined to create an environment where excellence in delivery would enable every donor dollar to go far. Adbou also felt that Gombala could be a test bed for many best practices that could be used in many of the other countries around the world that faced similar problems. The partnership between Nick and Adbou was poised to take concrete steps, but they wondered if some professional advice from a team of bright MBA students would benefit their cause.

You are one of those teams that are offered an opportunity to brief Adbou and Nick. Your challenge is to suggest steps that they should take, possible timelines and associated impact on Gombala related to the information that follows.

Donor Constraints

Gombala has five main donors – USAID, EU, JAPAN, DFID and the GLOBAL FUND – each of which represented the governments of the United States, the European Union, Japan and the U.K. as well as Public/Private Donor partnerships. Each of these donors contributes approximately 20% of the total funds provided to the country. However, each of them add constraints to reflect their approach to managing effective use of their funds. There were many possible constraints on the funds allocated by an individual donor.

Some donors provide funds in monthly increments, one month of funding at a time. Others provide funds in quarterly buckets and still other in six month buckets. In each of these cases, the funding is provided at the start of the period for use the upcoming period. While these constraints guaranteed that the funds would be available over time and not get used up immediately, they sometimes create difficulties, particularly when a large disease outbreak requires a quick infusion of funds in one month. In other cases, these constraints interact with other constraints placed by the donor to further restrict effective deployment of funds.

Other types of constraints involve restriction of funds use for treatment of particular diseases. Some donors want only to focus only on malaria and HIV/AIDS. Others want their funds focused primarily on pregnant women and/or children. Yet others want to focus their funds mainly on tuberculosis (TB) etc.

A third set of constraints are based on the urban vs. rural split of funds use. Often urban delivery is easier and more effective than treating rural patients in spread out regions. Constraints that funds have to be used for a certain fraction of rural patients ensured a wider coverage, albeit covering fewer patients.

Yet other constraints focus on the type of supply chain through which the products are permitted to flow. In some cases, the supply chain involves procurement by and flow through the Central Medical Stores. In other cases, special supply chains for malaria or HIV/AIDS that were developed by specific donors as private supply chains are earmarked for use. Some of these supply chains are effective in urban areas and others more effective in rural areas. Preference by a donor for a supply chain reflected a donor's confidence in the product traceability and tracking for that supply network.

Nick knew that he would never be able to get all donors to share their constraints in a common forum. But he realized that he needed to educate donors of the impact of their constraints on health outcomes. He thought of using DALY (Disability Adjusted Life Years) as a measure and, using data from the World Health Organization site (http://www.who.int/topics/global_burden_of_disease/en/), he took the data for Sierra Leone as a proxy for Gombala. He wondered how he could pull the data and through the use of a model, show how donor constraints impact health for Gombalans.

Government procurement

Historically, all funding was provided to the Ministry of Finance of Gombala. This unit coordinated with the Ministry of Health to purchase drugs and medical equipment to deliver them to hospitals as per requirements. Key decisions included contract prices, selection of specific drugs used to treat each of the diseases and the purchase quantities against demand forecasts.

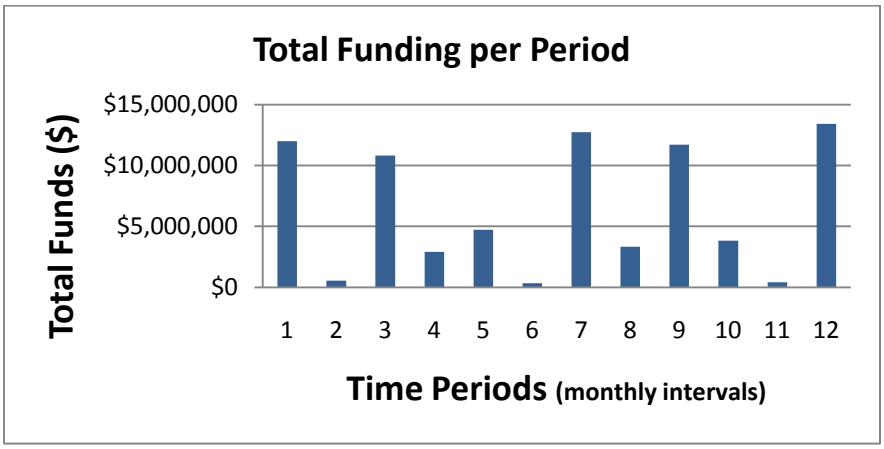
One change that had been implemented in Gombala, based on studies done by the World Bank sponsored researchers, was to decentralize purchasing into separate decisions by each of the three regions of the country. This decision was based on extensive research done by economists who claimed that the benefits of local ownership of decisions would be drug choices that would be better tailored to local disease estimates and treatment preferences. Their view was that any operational inefficiency would be more than overcome through this improved tailoring of supply to demand.

In effect, Gombala had three separate purchasing organizations, one for each region. They made separate purchasing decisions, carried separate drug inventory and satisfied demand only for their region. That said, observed satisfaction of prescription availability at public hospitals was under 50%, i.e., for any given drug prescribed, there was a 50% chance that there would be inventory to satisfy that demand. This problem was exacerbated if a patient was prescribed many different drugs – even the common ones.

Nick wondered if it was time to recommend centralized purchasing or if there was some other way out?

Erratic Fund Availability

One key issue that plagued purchasing organizations was availability of money over time. A plot of actual **fund availability over time** showed the picture below – it displays dollars available across the 12 months of the year based on fund releases.



Adbou had been approached by some financial groups in New York – they had suggested that they could lend to Gombala against donor commitments so that Gombala could have a credit line (for some

borrowing cost) that could be used as per drug demand rather than waiting for fund releases by donors. Adbou had worried that leaking some of the donor's money to get around their constraints would not be looked upon kindly. Yet, he wanted Nick to weigh in whether the money spent to have funds available as needed would be worth it. At what level of borrowing cost should Gombala agree to this scheme?

But Nick was also concerned that such financial instruments would delay dealing with the real problem – which was donor need to control financial flows. He surmised that any scheme that would cause donors to lose control of the specific deployment of their funds would not be acceptable in the long run. Just like the "rocks and water" analogy used to describe the role of Zero Inventory schemes, the financial buffers would leave the true problems unresolved, he felt. But he did understand Adbou's frustration.

Most of Adbou's time was spent going from donor to donor to release constraints just a bit so that each week's spending could be covered. Gombala financial staff were reduced to traveling agents who went from country to country aiming to get their goals accomplished. Surely there could be a better way that was more efficient, he suspected.

Information regarding drug inventory

Ideally, Nick felt, if there was inventory at the central store, the best way to allocate drugs to hospitals would be based on a replenishment model triggered based on hospital usage and projected demand (if there were surges expected). But data regarding current inventory status was woefully minimal. Thus, the staff in the central stores used a "push" system of forecasted demand to send drugs to hospitals.

But such push approaches, while rationally motivated, often resulted in the wrong types of medicines being sent to a hospital. There was little incentive for these drugs to be transshipped between hospitals too. The result was the unacceptable situation that some locations were stocked out while others were awash in inventory.

How could these tactical deployment issues be improved? One innovative experiment that Nick had heard about used cell phones to collect inventory information. The researchers had taught personnel in medical hospitals to count the inventory and report it back as a terse SMS code providing inventory levels for a select set of drugs. As soon as the data was received, the provider of the information was sent a reward – a few minutes of free talk time added to the phone. This incentive (which Nick recalled to be about 70 cents) had enabled the NGO to collect very high quality inventory data. They had also found that once inventory visibility was provided – transshipment between locations happened spontaneously and without any need for central command.

Nick wondered if he should recommend that some NGO fund such inventory information gathering in Gombala. Would it be worth taking donor funds and allocating it to collect inventory data?

Counterfeit Drugs and Pharmasecure

While the public procurement faced tremendous hurdles – Nick knew that Gombala's private drug trade was thriving. In most streets there were drug sellers with tablets sold in the open in baskets and

offering specific doses of medicines at low costs. This market was open at all times of the day and was easily accessible.

The problem with the private system was the assurance of quality; the only way the system offered drugs at all possible price points was the sacrifice of quality in some cases. Counterfeit drugs were comingled with branded high quality drugs – and the customers were unaware of the difference.

This lack of quality assurance was one of the reasons that Nick and Adbou had worried about providing money to patients to buy drugs from private pharmacies if the public system ran out. How could they ensure that patients were not being cheated regarding quality in their purchases?

One company that had suggested a solution was called Pharmasecure. This company had already set up a pilot in India in which they would put an SMS code on every drug strip (foil shrink wrapped tablets) as well as a cell phone number. As soon as the buyer purchased a drug, they could send this SMS code a receive confirmation regarding the verification of the drug. The system also tracked these codes so that duplicate use of the code would be prevented. Pharmasecure had also offered to remind patients about the dosage they should take, drug interactions etc.

Nick now had to help Adbou decide if it was worth paying Pharmasecure to put in these codes on drug strips in Gombala. He realized that if quality was assured, then patients could be permitted to buy these drugs from the private market and thus obtain increased drug availability.

Metrics, metrics, metrics

Nick was a believer in measurement as a way to establish benchmarks. While he accepted the difficulties associated with the quest for efficiency in developing environments, he was adamant that donors would need reassurance that their funds would not be wasted. But the problem was not one of no metrics but too many different metrics, each favored by a different donor. Some of the metrics were

1. Delivered cost per dosage
2. DALY – or Disability Adjusted Life Years – saved by the drugs and medicines
3. Childhood Mortality Rate (fraction of children born who do not survive until the age of five)
4. Rural Health provision
5. Fraction of the poorest of the poor served by donor funds
6. Supply Chain costs as a fraction of total costs
7. Stockout rates for drugs across locations

Nick and Adbou realized that in an ideal world, all of these metrics would be relevant – but how could they set up a mechanism that would enable all the personnel in the field and donor representatives focus on ways to improve performance?

By the time he looked up from his documents, it was late afternoon and the sun was lower in the horizon; time to stretch and get a great cappuccino down the street. He was still confused about where to start, how to set priorities, strategy …but he realized that perhaps a team of MBA students would be

successful given the task of applying private sector supply chain ideas to Global Health. He was curious what recommendations the teams might provide.