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## REFLECTIVE PRACTICE

# Educating the supply chain logistics for humanitarian efforts in Africa: a case study

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### Abstract

**Purpose** – There are gaps in the countries of Africa between basic universal health care and what is provided. Educating those who are trying to help is important to bring about change. Recently, there are many organizations and individuals responding to those needs, including governmental and non-governmental organizations (NGO). These entities strive to improve the conditions of the African people by providing essentials such as food, clean water, and basic medical supplies. The purpose of this paper is to examine the NGO humanitarian efforts to determine strategies for these organizations to maximize their effectiveness. This paper will provide a framework, with examples that can be used to educate organizations involved in humanitarian efforts how to use their resources more efficiently and effectively.

**Design/methodology/approach** – The methodology of this paper includes literature review and a site survey and interview are also conducted with the director of operations at an NGO called Global Health Ministries. A strengths, weaknesses, opportunities and threats analysis is performed to assess how this non-profit (and other non-profit NGOs) manage their operations with limited resources, unlimited needs of customers, a global logistics and supply chain, and the necessity to minimize risk to the organization.

**Findings** – The paper helps in determining how to leverage the benefits of an existing established network called Technical Exchange for Christian Healthcare (TECH) that can be utilized by NGOs to build a humanitarian supply chain for Africa and related decision framework. Various recommendations are derived from the analysis for improving services including implementing customer facing metrics, collaborating with other non-profit organizations to leverage the strengths of each organization, recruiting volunteers with specific business skills like logistics, grant writing, etc. and improving partnerships with global logistics service providers.

**Originality/value** – The major contribution of the paper is to present a design of a humanitarian supply chain for Africa and the associated decision flow framework for NGOs by leveraging and coordinating TECH network capabilities to help protect the safety of vital life of many vulnerable citizens in African continent.

**Keywords** Supply chain management, Africa, Health services, Non-governmental organizations, Developing countries

**Paper type** Case study



### Introduction

The “Universal Declaration of Human Rights” and “The Millennium Declaration”, speak to the necessity for guaranteeing basic human rights for all persons. These documents in particular call for action to care for the health of women and children (United Nations, 1948; UN Millennium Project, 2005).

According to a report by the Disease Control Priorities Project (DCPP), about US\$3.059 trillion was spent on healthcare worldwide in 2001, which is almost 9 percent of the global gross domestic product. Unfortunately, only 12 percent of that amount was spent in low- and middle-income countries, which account for 84 percent of the world's population and 92 percent of global disease burden[1]. There are huge gaps in the low-income countries between what is needed for basic universal health and what is spent. These are compelling reasons to combat the poverty and disease in low-income countries. There are individuals and organizations throughout the world focused on providing for the needs of impoverished men, women, and children. In order for these entities to be able to provide aid efficiently and effectively they must first be taught how to do so. This paper will discuss the problems that are faced and then provide recommendations. If this information can be disseminated on a large-scale these entities may be able to better service the health care needs of these people.

Many questions will need to be answered, for example, given the need for assistance in Africa, what types of organizations are responding? How can small, non-profit no-governmental organizations (NGOs) effectively manage a global humanitarian supply chain? This paper will look at some broad examples of current humanitarian efforts by all types of organizations, including NGOs. Strategies will be formulated to minimize risks, utilize strengths, create opportunities, and optimize supply chain logistics for NGOs. The authors also suggest that process decisions have to be taken to minimize overheads and increase efficiency of the system as a whole. The goal is to provide suggestions to small private organizations on how to maximize their effectiveness. This paper will review the changes that can be made to the current supply chain of humanitarian efforts in Africa. There is a huge demand for help, but limited resources. It is not to say that the governments and education system in Africa are not making progress on their own, to educate individuals to be able to make the kinds of decisions necessary to bring about change. Heller *et al.* (2007) draw attention to the fact that there have been around 250 graduates from the Ethiopian Addis Ababa University with Masters in Public Health degrees. Although this is a very small percentage of the population, it does show that some African countries are beginning to make progress toward helping themselves.

There are many different organizations and individuals providing relief to people in Africa, including:

- (1) governments and governmental agencies;
- (2) individuals; and
- (3) non-governmental organizations:
  - non-profit organizations;
  - corporations/businesses;
  - religiously affiliated organizations;
  - foundations; and
  - universities and colleges.

These entities strive to improve the conditions of people in Africa by providing essentials such as water, food, clothing, shelter, medical supplies, medical treatment, and basic human rights. Each group has a mission to help the people in Africa live

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a better life. Some provide money, goods, and hands-on help to the countries. Another form of aid is education; people are taught farming techniques, disease prevention, and medical treatment. Providing education as a form of aid, is a long-term solution, as the countries develop further, education will be the key to sustainable healthcare. Some of the aid is indirect: providing grants, guidance, training, and supplies to organizations which are directly helping Africans. Others try to stimulate the local economy by buying local goods; or to heighten awareness of the conditions of communities in need through public information initiatives.

For the purpose of this paper, the focus of the strategic analysis and recommendations will be on non-governmental agencies, and more specifically, small non-profit volunteer organizations. The authors are suggesting that by educating the members of the supply chain they may be better suited to serve the needs of the public. Dobriansky (2003), the US Under Secretary for Global Affairs, speaking to the Fund for American Studies in 2003 regarding international philanthropy, stated that:

[...] the government cannot do it alone. Not only do we have limited resources, but we don't always have the best answers and solutions. Indeed, people and non-governmental organizations can often best address the many challenges here at home and throughout the world.

Non-profit organizations make significant contributions utilizing few resources and a majority of the work is done by volunteers.

### **Literature overview**

Related information on this topic of research is presented under various sub-topics in this section.

#### *Conditions in Africa*

Africa contains some of the harshest living conditions in the world. It has had widespread natural disasters such as droughts, floods, and disease. Some of the poorest people and the shortest life span expectancy in the world live in Africa. According to the *CIA – The World Factbook*, Swaziland, a small country in southern Africa, had a HIV/AIDS prevalence rate of 38.8 percent in 2003 (Central Intelligence Agency, 2007). Of the top 30 countries on this prevalence list, 29 were African countries. Angola, an African country which is 30th on the list, had a 3.9 percent prevalence rate while the US rate was 0.6 percent. For Swaziland, the life span expectancy is 32 years and there are a total of five African countries in which the expectant life span is under 40 years. In comparison, for individuals in the USA, the expected life span is 78 years. Because the disease is so widespread and treatment limited, it is estimated that over two million people in Africa have died of AIDS in 2005.

Africa has limited infrastructure. The entire continent has 800,000 miles of road with only 60,000 paved miles while the USA has over 6,400,000 miles of road. Less than 2 percent of the population has cars so the main modes of transportation are walking or biking. While there are phone lines in and between major cities, there are very few phones in the rural areas. Satellite phones are an option, but very expensive (*Africa: World Book*, 2005).

#### *Governmental agencies*

The US Government makes a significant effort to help developing countries in a variety of ways. The European Union (EU) has three broad classes of aid programs.

The first class is designed for structural aid to EU member states. The second class is capacity building aid to accession candidate countries (Bailey and de Propris, 2004). The third class offers help to non-European developing countries, most of which are former European colonies. One program to help developing countries' markets is to buy product and then either eliminate, or reduce, the tariffs on the product from those countries. This is handled through the World Trade Organization Doha Development Trade Negotiations. As a result of the efforts, the US Government was the leading importer of goods from developing countries, importing \$661 billion in 2004 (The United States and International Development). In 2003, the US official development assistance was \$16.3 billion while \$1.5 billion went to other country assistance (Table I). Since development aid is only a supplement to domestic resources, its effectiveness is best evaluated in the context of the recipient's institutional and policy environment (Abegaz, 2005). This environment is largely the product of a country's political economy, which is profoundly shaped by initial conditions such as endowments, historical legacies, and global geopolitics (Rodrik, 1999; Acemoglu *et al.*, 2004; Weil, 2005).

When it comes to development finance, the years 2005 and 2006 turned out to be a financial bonanza for Africa. The recommendations of the recently released reports of the Commission for Africa (2005) and the UN Millennium Project (2005) are expected to be acted upon by the donor countries. The reports call a war on poverty by scaling up aid, reducing unsustainable debt, and placing Africa on the development ladder.

The US Agency for International Development (USAID) is the part of the US Government that is responsible for non-military foreign aid. In 2005, the USAID budget was \$12.6 billion. It has several different initiatives, such as working with governments of countries needing help with improvement initiatives. For example, it provides help by giving out grants and guidance, and by working on major issues such as the fight against AIDS/HIV. One division, the Millennium Challenge Corporation, works with developing countries on specific programs targeted at reducing poverty and stimulating economic growth. Currently, Millennium Challenge Corporation has a \$110 million four year pact with the Madagascar Government to raise overall incomes by improving agriculture market. Through the program, the Madagascar Government is working with rural farmers to secure property rights, gain access to credit, and receive agriculture

Source	\$US billions	Percentage of total
US official development assistance	16.3	13
US other country assistance	1.5	1
US private assistance	62.1	47
Foundations	3.3	
Corporations	2.7	
Non profits and volunteerism	6.2	
Universities and colleges	2.3	
Religious organizations	7.5	
Individual remittances	40.1	
US private capital flows	51.0	39
US total economic engagement	130.9	100

Source: Adelman (2005)

**Table I.**  
Estimated US total  
economic engagement  
with developing countries  
in 2003

production and business training (Madagascar, 2005). USAID (2004) also works with private organizations to give them guidance on how to better work within certain countries, how to apply for its grants, and assists in finding alliances.

In 2002, President Bush created US Freedom Corps to help promote and expand volunteerism in the USA. It has several divisions, such as Volunteers for Prosperity, which help with global relief. Volunteers for Prosperity helps match skilled workers with volunteer opportunities. Both individuals looking for opportunities and organizations needing volunteers can use the group as a resource. The group also promotes volunteerism by recognizing volunteers through the President's Volunteer Service Award[2].

Examples of international agencies include the World Health Organization (WHO), UNICEF, and CARE. WHO is the United Nations' specialized agency for health. According to their web site, WHO's goal is "the attainment by all peoples of the highest possible level of health." WHO sets priorities and policy through its World Health Assembly and works with NGOs to achieve its goals. UNICEF is also an organization of the United Nations which was created in 1946 after World War II. It is a global entity with a mission of breaking the cycle of poverty by providing for the health, nutrition, education, rights, and social/emotional needs of children and mothers in developing countries[3]. CARE is one of the largest international humanitarian organizations and it focuses on helping fight poverty in certain high-need countries. It implements specific projects to improve conditions and then partners with individuals, organizations, and even governments to help accomplish the goals of the organization[4].

#### *Individuals*

Individuals' contributions make up a significant amount of international aid in the USA. In 2003, \$40.1 billion was sent to people in developing countries by people in the USA, usually by those who left a developing country and then earned the money in the USA (Adelman, 2005). Other individual contributions end up being reflected in nonprofit organizations or foundation contributions (The United States and International Development). Some individuals choose to provide aid in the form of education. For example, some medical technology professionals donate their time by going to places like Africa to help teach and train technicians to work with the modern medical technology. One such organization that facilitates such training and outreach programs is the Medical Equipment Repair Training Program for International Aid (McDaniel, 2001).

#### *Non-governmental organizations*

There are many NGO that are operating to provide international assistance. They include foundations, corporations, universities and colleges, private voluntary organizations (PVOs), religious organizations, and non-profit organizations.

*Foundations.* There are many individuals, such as former President Bill Clinton and Bill Gates, who are using their power and money to help through their own foundations. The William J. Clinton Foundation sponsors the Clinton Global Initiative to bring together positive ideas and the people who can implement them. They hold an annual meeting with over a thousand leaders from businesses and government and NGO to discuss and plan strategies in areas of global concern such as health,

poverty alleviation, and energy and climate change. Last year, over \$7.3 billion was committed by participants to help with those concerns. The foundation also has a database to help match organizations needing volunteers to volunteers looking for an opportunity[5].

Bill Gates, is also attempting to improve the health and living conditions for people in developing countries and also locally. In 2005, the Bill and Melinda Gates Foundation gave out \$1.6 billion in grants to non-profit organizations. In 2007, Warren Buffet pledged to give stock shares to the organization that approximate \$1.6 billion in 2008 and is estimated to be even more in subsequent years. Not only will the money be used for aid, but also the gesture also gave the concept of philanthropy some publicity[6].

*Corporations.* Many corporations and businesses participate in community and/or global giving. In 2003, corporations gave \$2.7 billion to provide aid in developing countries (Adelman, 2005). Exxon Mobil is one example of a company that generously contributes. Exxon Mobil, like many other large corporations, has its own foundation, which focuses on philanthropic efforts for the company. In 2006, Exxon Mobil gave \$138.6 million in donations of cash, goods, and services worldwide. \$79.3 million went to support communities in the USA and another \$59.3 million went to communities in other countries. Major global efforts focus on the fight against AIDS/HIV and Malaria. The company also encourages and tracks employee contributions – both monetary and volunteer time. In 2006, the company’s employees and retirees donated \$31 million through Exxon Mobil’s higher education and cultural matching programs and employee-giving campaigns. Also in 2006, the over 14,000 Exxon Mobil employees, retirees, and their family members donated more than 680,000 volunteer hours to more than 5,800 charitable organizations in 22 countries (ExxonMobil Corporate Citizenship, 2008).

*Universities and colleges.* Universities and colleges provide assistance, primarily through scholarships for people in developing countries. In 2003, \$2.3 billion, in grants and scholarships, was given to individuals in developing countries to acquire an education (Adelman, 2005). This is one area that the author feels could be improved upon. If universities and colleges provided more grants to educating individuals in developing countries it would be easier for these countries to provide some of their own health care needs. Some universities are able to provide indirect aid to Africa by providing their students with the opportunity to study what issues and challenges these regions of the world are facing. One such university is the University of Pennsylvania. By providing students with the opportunity to become better educated on these topics the number of people who would be efficient and effective in managing the aid delivery system increases[7].

*Private voluntary organizations.* PVOs is a term the US Government uses for independent groups that work along side USAID to make international improvements. The groups have varying geographic scope and philosophical purposes. They typically provide hands-on people to people support. As of October 2003, there were 489 US PVOs and 58 PVOs registered with USAID. A volunteer organization must be registered as a PVO in order to receive funding from USAID. In 2004, the PVOs received \$14.9 billion in private support, \$2.6 billion from USAID (2006), and \$2.5 billion from other government agencies and international organizations.

*Religious organizations.* There are many religious organizations across the globe and each support missions and giving in the USA and around the world. In 2003, religious organizations contributed \$7.5 billion in aid (Adelman, 2005). As an example,

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the Evangelical Lutheran Church in America (ELCA) is a synod within the Lutheran Church that provides assistance. The ELCA is focused on Africa, particularly sub-Saharan Africa, and congregations in the USA are encouraged to donate to these efforts financially. The Synod also encourages individuals to travel as volunteers to assist in the efforts aimed at sister congregations. The ELCA also supports missions for medical support and food to low-income areas in Africa and other countries.

*Non-profit organizations.* Nonprofits and volunteerism made up \$6.2 billion in aid in 2003 (Adelman, 2005). One example is Direct Relief International (DRI), established in 1948, is a non-profit organization based in Santa Barbara, California which provides essential material resources such as medicine, supplies, and equipment. DRI functions out of a 50,800 square foot warehouse with a staff that consists of 34 full time and eight part time employees, and more than 400 volunteers. It is a non-governmental, non-sectarian and apolitical program that utilizes corporate partnerships for assistance programs. DRI coordinates these efforts with partner organizations in the countries they serve. These partners usually provide health services to people who are poor and live in rural areas with little health infrastructure[8]. DRI's strategy has always been to provide direct and targeted assistance which involves the people being served. They have partners in Afghanistan, Bangladesh, Cameroon, El Salvador, Guyana, Haiti, India, Nepal, Nicaragua, Sierra Leone, South Africa, Sri Lanka, Zambia, and also low-income areas in the USA. DRI has relationships with many corporations who give continuing support as medical product donors – 3M Pharmaceuticals, Johnson & Johnson, GlaxoSmithKline, Pfizer Consumer Healthcare, and Proctor & Gamble to name just a few.

### **Methodology**

General research for this project was based on the articles reviewed on this topic. In order to gain insight and understanding first hand, the authors of this paper did a site visit and interview with the director of operations at an NGO which has a global reach and a supply chain/logistics focus. On March 13, 2007, Scott Lien, from Global Health Ministries (GHM, 2007)[9], discussed the organization's typical operations described in the next section.

### **GHM operations**

GHM, headquartered in Minneapolis, is an organization which serves global healthcare programs affiliated with Lutheran churches. The organization was founded in the early 1980s and its Mission Statement is "Global Health Ministries continues the healing ministry of Jesus Christ by enhancing health care programs of Lutheran churches in other countries." This entity collects donated medical supplies and equipment to be shipped overseas. In 2005, GHM delivered a record \$2.7 million in medical supplies, equipment, and project grants overseas. In 2006 that number was \$2.2 million (GHM). According to the GHM web site, they fulfill their mission by:

- Funding approved health care projects, scholarships, support for charity patients, capital improvements, development of appropriate technology, and more.
- Gathering and shipping useful donated health care equipment and supplies to countries where such materials are not available or are very expensive.
- Communicating to groups and congregations the opportunities and needs of the church's overseas health care programs.



- Praying for the church's health care missionaries and those they serve.
- Recruiting nurses, dentists, doctors, surgeons, and allied workers for overseas service through Lutheran mission boards.
- Advising mission boards, synods and other groups on health care mission issues out of the rich reservoir of knowledge and experience of GHM supporters.

Financial contributions help cover the cost of:

- facilities for patient care;
- mosquito netting to protect family homes from malaria;
- monthly subsidy for remote clinics;
- drilling a village well; and
- training cost for nurses, technicians and other health care personnel.

Volunteers sort the supplies, repair and refurbish equipment, and then containerize and ship it to other countries, mostly in Africa. They create hospice kits for individuals suffering from AIDS and midwife kits for women giving birth which contain basic supplies. The kits used to contain multivitamins and ibuprofen, but GHM has had to stop including them in 2007 because of import restrictions by the African Government. GHM volunteers make bandages from sheets and other cotton material and roll them for wound care.

Currently there are four full time and two part time employees (Figure A1). The 2005 Annual report indicates that more than 16,000 volunteer hours were logged for the year, which equates to nearly eight full time employees. In 2006, more than 200 active volunteers logged more than 12,230 hours. Utilizing volunteer hours and limiting the number of paid staff has helped them maintain a high ratio of GHM's overseas program expenses to total expenses at 95 percent in 2005 and 94.2 percent in 2006 (GHM).

The organization works out of a 16,000 square foot facility; 4,000 square feet of office and 12,000 square feet designated warehouse and repair stations. GHM manages 14 to 16 overseas shipments each year, using 20 and 40 inches containers. GHM has, on two occasions, shipped supplies by airfreight. They recruit volunteer "travelers" to personally transport supplies in luggage. According to documents provided by GHM, the tentative schedule for 2007 includes shipments to Liberia, Tanzania, Bangladesh, Cameroon, India, Nigeria and Madagascar (Table A1). The consignee of each shipment is a healthcare-related facility or individual with ties to a Lutheran church. Workers in the facilities abroad place orders by e-mail using a spreadsheet which lists all of the supplies and equipment available at the GHM warehouse. Volunteers pick the products from locations and bins where they have been sorted as they are donated. The freight containers are dropped on Friday at GHM and volunteers load it over the weekend. Supplies are bar coded and so a computerized manifest is created. Scott Lien coordinates transport and shipping with companies like Maersk, a global integrated logistics provider. When the containers reach the destination port, the consignee is notified by e-mail. If the container is leased, it must clear through customs in 14 days. If the container is owned, the consignee often keeps the container and uses it at the destination for storage.

The containers are transported by truck from the port inland. A table (Table AI) listing the shipping schedule for the GHM, highlights the costs incurred due to container shipping. This also shows the assigned receiver at the country the freight is destined for and the total cost as a result of the inland transportations, container cost and freight. These shipments would take place on the scheduled dates through the above-mentioned companies.

GHM collects donated supplies from many sources. Some hospitals and clinics donate medical supplies that would normally be thrown out because of policies in US healthcare. For example, surgical medical equipment is packed together in sealed bags and it is common for the bags to be opened for one utensil; the rest of the parts are then considered unusable. GHM also has relationships with companies such as Tyco Health for defibrillators and surgical equipment and Nonin Medical for new pulse oximeters. Individuals, churches, and businesses often give monetary donations in kind, as well as donated supplies.

**Strategic analysis**

Humanitarian entities, like GHM, collecting supplies and materials and then shipping them to foreign countries, will encounter the same issues and obstacles as any business in an import/export type of supply chain. Table II lists strengths, weaknesses, opportunities and threats (SWOT) faced by GHM.

Logistics to support the efforts of any global endeavor, increases the planning complexity and the implementation issues of every facet of the supply chain. Logistics management will need to address social, cultural, and political environments in addition to managing performance cycle time, transportation, operations, security, and technology. Based on an analysis of strengths, weaknesses, and threats, GHM should have several opportunities of which to take advantage.

GHM has a “grass roots” feel; their people are dedicated to helping people. The culture of the organization is a strong shared mission and vision. Volunteers and staff alike are passionate about the cause and give of their time and resources willingly.

Strengths	<ul style="list-style-type: none"> <li>Passion for aid and helping Africa</li> <li>Low overhead costs so more donations effectively reach destination</li> <li>Established contacts and support base in international territory</li> <li>Commitment is high due to voluntary workforce</li> </ul>
Opportunities	<ul style="list-style-type: none"> <li>“Green” donations</li> <li>More volunteers</li> <li>Leverage other organizations</li> <li>Untapped Lutheran base can be utilized</li> <li>University and college base for workforce</li> </ul>
Weaknesses	<ul style="list-style-type: none"> <li>Limited staff causes constraints on work consistency</li> <li>Poor metrics</li> <li>Voluntary workforce by nature has limited time</li> </ul>
Threats	<ul style="list-style-type: none"> <li>Lack of skills and technology</li> <li>Reliance on donations</li> <li>Exports</li> <li>Local agencies in Africa not on par with GHM</li> <li>Security requirements causes constraints on packaging</li> </ul>

**Table II.**  
Strategic SWOT analysis  
of GHM

Because its focus is medical, individuals with healthcare experience are drawn to GHM. Some volunteers also travel to the countries they serve in Africa to carry supplies and then provide training and assistance at the clinics in those areas. One of the biggest threats to this NGO, or any other, is the fact that it must rely on donations for its operating income.

Much work gets done each day at GHM, considering the fact there are only four full time and two part time employees. The benefit of having a small staff is that administrative expenses can be kept to a minimum, which means that most of the donated money can be used directly for the mission efforts. The costs of having a small staff are a lack of business skills and employees who are stretched to their limit for time. GHM's Director of Operations, Scott Lien, reports that they do not have enough time to get their work done, to participate in strategic planning, or even to take classes or training to gain the skills they lack. There is nobody on staff dedicated to marketing or fundraising so there is very limited proactive engagement with the Lutheran churches or others in the community to gain resources or support. The current staff is just too pressed for time. Because the majority of their workforce is volunteers, it is difficult to guarantee that their skills match the needs of the organization. GHM is lacking in the areas of grant writing, logistics/customs requirements, fundraising, marketing, and technology. A warehouse manager has been hired to oversee materials handling which has helped to free up Lien's schedule slightly.

Technology is one of the key requirements for any company, especially those operating globally like GHM. Internally, they do not have resources for a robust network. They have a barebones e-mail system in order to communicate with the doctors and staffs at the African hospitals, clinics, and schools, and other global partners. According to Lien they use resources like "Skype" which are inexpensive and accessible but not necessarily the most effective. Orders are placed with GHM by e-mail as well. But, lack of technology and network availability in Africa is a threat to GHM's model.

Donations come to GHM in bags, boxes, and carloads. Volunteers must inspect all materials and equipment, then sort it into bins/slots in the warehouse. Used equipment is either refurbished or taken apart and used for parts. When picking product for shipment, it is counted and checked for expired dates before being packed. Bar coding is used to maintain inventory records and to produce a computerized manifest. At this point in time, GHM does not utilize standard boxes and so there is no consistency to size and shape of packages. They simply reuse and recycle the boxes they acquire. Unfortunately, this means it is difficult to pack containers efficiently. They have also been experiencing issues with customs, as the labels or markings on the boxes do not match the contents. The content labels GHM applies are less than ideal.

GHM uses a freight forwarder to transport the 20 and 40 foot containers. The freight forwarder can assist with the documentation, financing requirements, scheduling, and customs clearance. Freight forwarders in Africa have a reputation for providing more services than typical companies in other countries[10]. This is a benefit due to the fact that ever-changing regulations and export requirements cause confusion and frustration for a lean entity like GHM – it is hard for them to keep up. Security requirements have increased in recent years. The Advanced Manifest Rule and the Advanced Cargo Information regulations require detailed cargo data for anything imported or exported by the USA by ocean, air, rail, or truck. US Customs programs (WTO and WCO) have changed verification processes to include exports and now

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require declarations that include commodity description, price, origin, destination, shipper, consignee, and transportation provider. Increased safety precautions, while necessary, increase the costs to transport. While all of these procedures and regulations are frustrating and may cause delays, noncompliance would mean stiff penalties or potentially complete shut down. There is benefit to deepening the relationships with the freight forwarders to take advantage of their expertise and skills.

There are logistics concerns once the cargo reaches a destination in Africa. Local governments have the power to prevent people and supplies from entering the country. If the cargo makes it past the local customs officials after the containers reach the destination port, the consignee is notified by e-mail. If the container is leased, it must get cleared through customs in 14 days. If the container is owned, the consignee often keeps the container and uses it at the ultimate destination site for storage. The containers are transported by truck from the port inland. Lack of infrastructure into remote areas of Africa makes these logistical efforts cumbersome. In addition, GHM is not able to guarantee that the supplies and equipment are received by the proper individuals and then used as they were intended to be used. Because the local staff at the facilities in Africa does not trust that GHM will continue to provide supplies, they have been known to hoard and steal. This means that individuals seeking medical help sometimes do not get what they need. In addition, when the locals take over as administrators of a facility, there is no guarantee that the individual will perform to the GHM standards.

There is a large base of Lutheran churches that is largely untapped. There are also possibilities for funds from individuals through estate planning. With marketing and fundraising resources there would be opportunities to capture and encourage giving from businesses and individuals. Recruitment for volunteers and donations could be more than by word of mouth. GHM could be marketed as a "Green" organization because of the way in which they collect and reuse medical supplies which might otherwise have been discarded.

There are grants and aid available through the government and various other agencies; however, due to time constraints these options have not been fully explored by GHM. Another opportunity for GHM is the universities and colleges in the area. Students in non-profit business or supply chain/logistics programs could intern at GHM and provide assistance to the program while earning credit and valuable real world experience. Students studying in other fields could also be helpful in contributing their own assistance. For example, medical schools could offer more extensively a program for volunteering in these areas of need. Another contribution that universities could make would be to offer classes that are more specifically targeting the concepts that this paper is discussing. Another way that university students are able to help is to choose to take their internship experiences into areas of rural Africa. Medical students at one university in Africa are encouraged to do their internships in rural settings because this will help the communities. This shows that not only US universities have discovered the benefits to students of learning first hand in a challenging environment. The problems faced today can be solved tomorrow through educating more individuals about efficient ways to provide aid (Igumbor and Kwizera, 2005).

GHM is a member of Technical Exchange for Christian Healthcare (TECH)[11]. TECH is an association with a current membership of more than 100 medical mission organizations. They have established standards of excellence for collecting and sending medical and dental donations (Technical Exchange). GHM and other NGOs

use TECH as a resource and communication network, to collaborate for resources, and to share risk with other similar NGOs. GHM should continue to leverage the expertise of TECH and other similar organizations. Another resource possibility is the expertise of retired individuals who have business skills including logistics/supply chain, grant writing, IT support and technology development, fundraising, international business, and volunteer/employee training. Recruiting volunteers for specific positions would enhance their supply chain effort and strengthen their knowledge base in general.

Logistical processes will benefit as technology and infrastructure improve in Africa. Communication will become less costly and more reliable. Supplies will be easier to transport and track. As these risks are decreased, costs will also be decreased.

### Analytical framework

This section examines the current GHM supply chain, the proposed supply chain that leverages TECH organization infrastructure for NGOs and the associated decision framework for effective and efficient humanitarian supply chain distribution network.

#### Current supply chain

GHM is primarily the coordinator of goods and services going to the Lutheran hospitals in Africa serving in many different countries, as shown in Figure 1.

GHM receives money from most of their suppliers, ranging from government grants for shipments, to individuals and churches making contributions. GHM gets equipment donated from hospitals and clinics or tries to purchase used equipment from used equipment companies or new equipment at discount. Donations are requested from individuals and churches for items that they can use for hospice and maternal kits, rolled bandages, knitted bandages, and baby caps. They also buy drugs from drug companies,

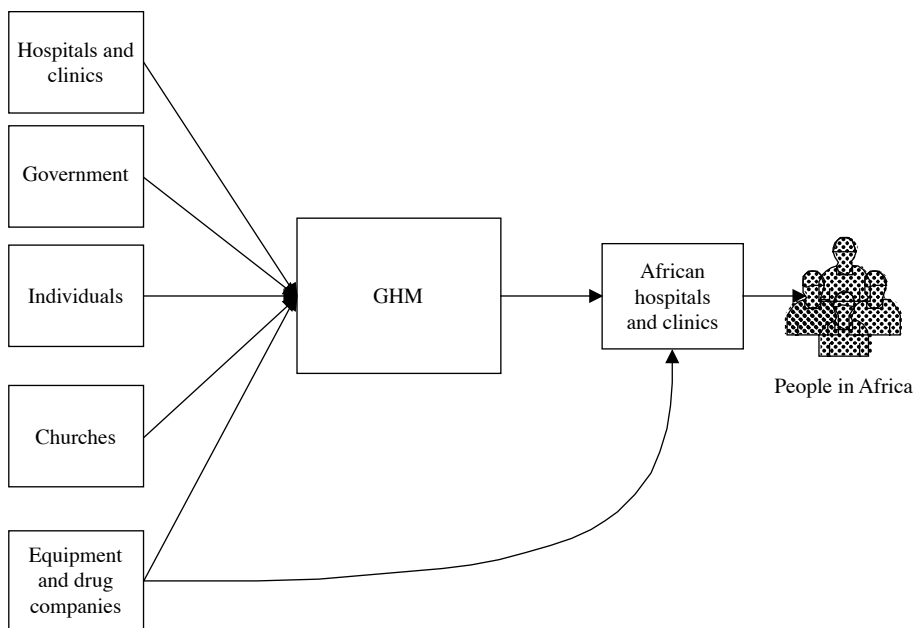


Figure 1.  
GHM supply chain

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but the product is sometimes shipped directly to the hospitals in Africa because of challenges importing/exporting them. They have found a pharmaceutical company in Europe that can import the drugs for a reasonable price. They accept donations of such common goods such as gloves, bandages, surgical tools, and syringes. Also, if the goods carry an expiration date, GHM needs to make sure that they will not expire within a year of ship date otherwise the receiving country could reject the entire shipment.

At GHM, they both push and pull the parts through their facility. Their customers are the hospitals and clinics in Africa and they provide of list of goods that they have in inventory via e-mail. The customers usually request the goods from the list, but they may also ask for GHM to locate other goods for which they need to find a source. GHM locates a source by contacting hospitals and clinics to determine if they are able to donate equipment. If they cannot get a donation, they try to find a company that will sell either used or discounted equipment or they will find new equipment at the best price.

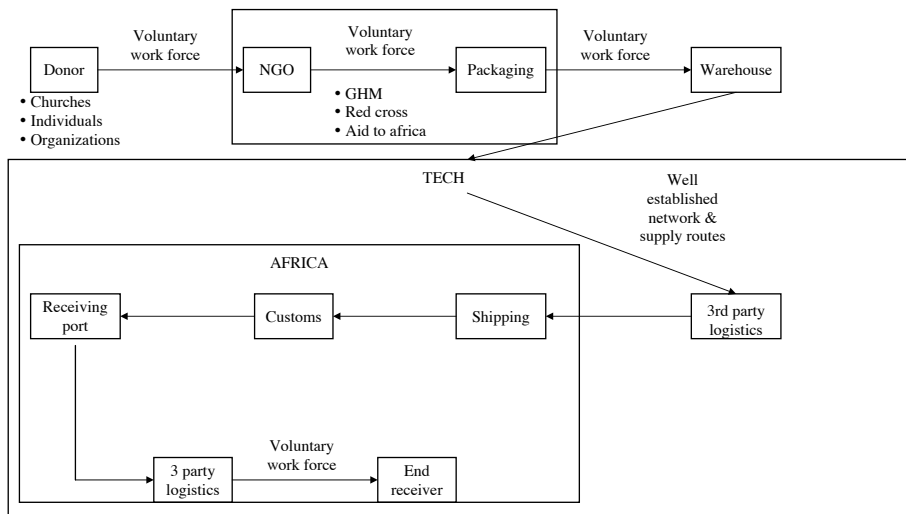
GHM must also coordinate shipments of goods, pack containers, prepare paperwork for exporting the goods, and work with the freight forwarder to provide transportation in the USA and in the developing countries.

Many of the hospitals and clinics do not have the proper personnel to fix or maintain equipment in the hospitals. GHM will sometimes coordinate technicians in the USA to go over to the clinics to repair the equipment. Unfortunately, it is also difficult to obtain replacement parts and ongoing supplies.

#### *Leveraging TECH*

It should be noted that organizations like GHM and other NGOs can find a helpful lever in organizations such as TECH. While TECH has a well established supply network and resources, NGOs can tag team with TECH to leverage the existing supply network. It is necessary to understand how the NGOs are currently using TECH in order to improve the collaboration. To this end we study the existing relationship and the network from the start of the supply chain (donor) to the end (people in need). We also explore how NGOs use the third party logistics to ensure that the products reach the end-user.

The supply chain starts with the donor (Figure 2) who donates the aid towards Africa to the voluntary workers who campaign towards funding and supplies like non perishable food, clothing, educational material, etc. There is a missing link in the current model of aid allocation between the primary, taxpaying principals in the donor and the secondary, aid-targeted principals in the developing countries. The lack of effective self-evaluation by the intermediaries (i.e. donor agencies and recipient governments) has inevitably produced unsatisfactory results that are widely decried (Hansen and Tarp, 2000; Easterly, 2002; Kanbur, 2003). This donation is collected and gathered by the aid workers in the NGO offices and then eventually forwarded to the packaging department in the NGO to be stocked up and sent to the warehouse where items and supplies are stored for a particular period of time until it qualifies for shipping in the form of either a full truck load (FTL) or half truck load. In order to make the process efficient, usually the NGOs wait until there is a large enough number of shipments that can guarantee a smooth flow. After the FTL is ready this is shipped to intermediate companies like TECH that have well established supply networks and routes with the resources and technology to monitor the shipments. TECH, in turn uses the networks such as third party logistics supplier such as FEDEX or UPS. These help in the shipping of the packages towards the receiving country in Africa.



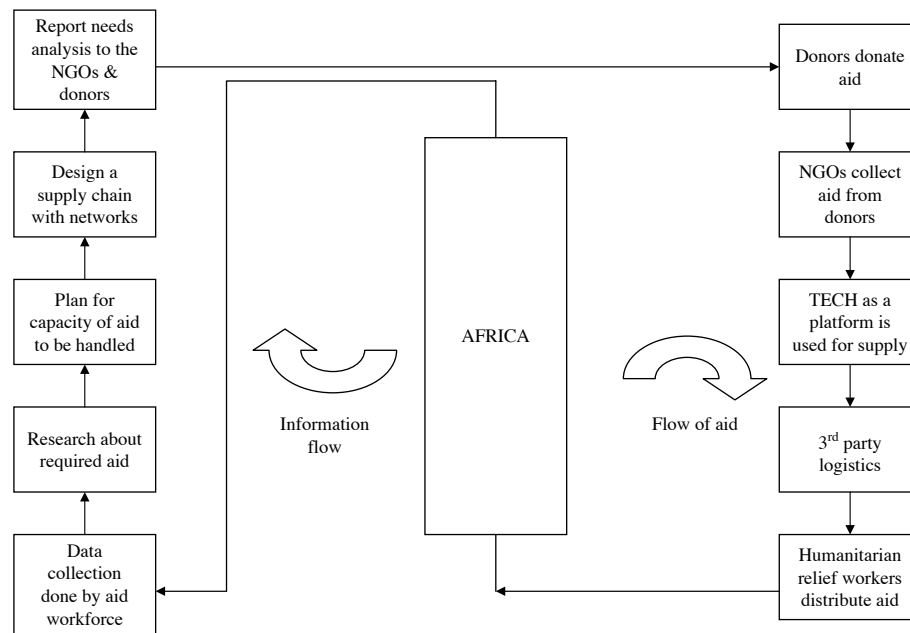
**Figure 2.**  
Supply chain network of  
the aid flowing to Africa

Here, TECH manages the customs and the shipping to the receiving port of the country. Again, the group uses TECH's assistance in getting the freight shipped through the third party logistics and there from the aid workers situated at Africa take over to distribute the relief materials to the end receiver.

In this regard, the current system employs a very efficient method to transport the shipment due to consolidation of all the aid material from donors through different organizations at TECH. The overall costs for the different NGOs using TECH's supply chains and networks will be distributed between the NGOs resulting in economy of scale. Also, this ensures that a larger proportion of the aid reaches the end-user and is not spent in overhead and management costs.

The operation is also supported by an efficient process decision framework. This is a necessary component of the supply chain as critical decisions regarding the cost effectiveness, efficiencies of the supply chain needs to be determined. As a corporate example, consider Dell's supply chain which utilizes advanced forms of postponement where information flow is critical in the supply chain (Kumar and Craig, 2007). Similarly, organizations like TECH might employ such methods to transport the aid on time, to the right people and in a safe manner.

The major stake holders are the donors, NGOs, TECH and the relief workers on site. The primary focus of the whole system (Figure 3) is to effectively transport aid relief to the required country at the right time by cutting overhead costs so that the majority of the relief is received by the needy rather than being spent on the system (Atkinson, 2005). To this end, the different stakeholders have to manage different aspects of the system. As an example, the third party logistics provider needs to monitor the cycle time, throughput time and the delays caused in the supply chain. The organizations such as TECH monitor these components along with quality of consignments shipped, targets achieved, and collection and distribution network efficiencies. The NGOs make process decisions such as which organization has better networks, tracking systems, donors and their aid proceeds and assessment of the situation and analysis of the country in dire need of resources. The relief workers associated on site through the



**Figure 3.**  
Decision flow diagram for  
the aid flowing to Africa

NGOs will have to collect data about the required amount of relief material, type of relief material and the required time frame for delivery. This data are researched, analyzed and the supply chain should be decided on this data. This system will ensure that the system capability is high and achieves its goal of aid relief distribution.

### Recommendations

We outline our recommendations from the analysis undertaken under various categories such as, resources, metrics, equipment availability/sources, and logistics. These recommendations are important lessons that need to be learned by organizations looking to provide aid.

#### Resources

- GHM should do more outreach with churches to tap into their knowledge, skills, and monetary resources. People feel good about volunteering, are willing to donate time and materials, and often just need to be given a volunteer opportunity. Since the GHM volunteers are passionate about the mission, the volunteers could be recruiting volunteers.
- There are millions in grant dollars available from the government and other groups. The US Government even has an information page that provides guidance on how to get aid. GHM personnel have not been able to find the time to apply for them, but they could tap into their volunteer pool to find people who could focus on grant writing or teach them grant writing skills.
- Improve interface between clinics and GHM to allow more pull from customers and clinics. GHM has an inventory database and they could set up a web



interface so that their customers could check inventory availability. They need to be flexible and accept calls/faxes since not all customers have internet, but technology is improving.

- A cost/benefit analysis could be performed to decide if it would be appropriate to add one more paid position. As noted before, specific skills should be recruited. If it is determined that another employee is not possible, then GHM should spend some time recruiting volunteers with the business skill sets they need.

### *Metrics*

GHM currently tracks metrics such as volunteer hours, value of goods sent, and donation amounts going directly to the clinics versus the total amount of money donated. Its metrics are focused on numbers at their site and they are not measuring the impact on the customer. They need to be evaluating their impact on the hospitals and clinics and the people being treated in Africa:

- (1) GHM might want to track inventory turns and product/donation velocity.
- (2) They need to have customer satisfaction information to determine how effectively they are meeting the customer's needs. One example would be to ask the hospital and clinics how often GHM is able to get them the equipment that they need in a timely manner.
- (3) GHM could also ask the recipients of the hospice and delivery kits, bandages, and other specialty items, if the supplies are meeting the needs of the intended patients, if the quality of the components is acceptable, and what other items that they might need.
- (4) Customer facing measures should be initiated. Positive feedback from the end-users could be used in marketing materials. Measurements should include (but are not limited to):
  - number of people served in all facilities;
  - number of people who participate in education programs provided; and
  - customer satisfaction surveys (customers include clinics, hospitals, facility contacts, and patients).

### *Equipment availability/sources*

Getting the right equipment to the right people at the right time is a big challenge for GHM. There are many hospitals and clinics in the USA that have equipment they are replacing or non sterile surgical equipment that GHM could use that would otherwise be disposed of, but coordination is needed to meet the supply with the demand:

- There are a few private companies that are buying the equipment and selling it to organizations like GHM. Perhaps, an organization like TECH could form an alliance with one of those companies to do it for a small profit or even set up a nonprofit.
- There are also other nonprofit companies that have equipment use and maintenance training centers in Africa. GHM could partner with them to get locals trained so that GHM does not have to keep sending people over to fix the

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equipment. Improvements in communication technology would allow for remote healthcare and equipment maintenance training.

- Work with equipment manufacturers, hospitals, and clinics more closely to get donations. GHM should find ways to recognize those contributions so those entities are able to reap greater benefit from their philanthropy.

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*Logistics*

Shipments are an expensive, and significant part of the lead time:

- Partner with global logistics companies and build relationships; try to negotiate reduced pricing in the name of philanthropy.
- Leverage shared shipments with other customers going to the same places.
- Seek out a company or other organization that would be willing to provide standard boxes or help defray the cost of purchasing standard boxes.
- Use logistics partner to help with training of GHM staff about import/export/customs regulations and requirements. Making sure the staff fully understands the regulations and requirements should help reduce the risk of delays or penalties due to mistakes or less than optimal practices.

**Implications and value of the study**

What is clear from the work of this study is that a successful organization starts with passion for the mission and vision, which is at the heart of the institution. The mission must be clear and firm yet allow for enough flexibility to change and stay relevant. The identity of that mission becomes clear through the actions of those involved. NGO need leaders with strong business management skills and a committed spirit. The leaders must ensure that the right people are hired for the right positions.

A marketing focus is essential for ensuring that resources and donations are secured. The mission and vision need to be shared with volunteers, prospective donors, and recipients alike. The management team must portray a consistent message about the identity and the values of the organization. Because the budget is determined solely by the donations received, management will need to ensure that all processes are efficient and effective. It is important to spend wisely, not only because of limited resources, but also because donors want assurance that gifts are administered appropriately.

Management of global supply chains is similar, whether the entity is for profit or non-profit. Decisions will be impacted by events and regulations which are out of the entity's direct control. Identification of supply chain partners and collaboration in all phases of the supply chain is essential. Decision-making process has to be a thorough and analyzed methodology to make it more efficient. This process incorporates the planning cycle and it is worthwhile to spend a much higher amount of time on the planning to deliver the results in a timely manner. The development of metrics specific to the organization is also necessary and will allow for practical supply chain/logistics initiatives as well as meaningful customer focused service.

The most apparent shortcoming is the limited staff. While it allows for minimal administrative expenditures, it creates employee and volunteer frustration, as there is not enough time to get work completed, learn new skills, or track down resources to improve processes. A balance must be achieved between budget constraints and operational abundance in terms of resources to be truly effective.

### Conclusions

Anthropologist Margaret Mead said, “Never doubt that a small group of committed people can change the world. Indeed, it is the only thing that ever has.” Although the USA is spending billions of dollars on humanitarian efforts, the efficiency and effectiveness of the efforts should be monitored to make the greatest impact. The small group of people at GHM is definitely changing the world – leveraging a global supply chain, using volunteers, and with limited resources. Many lessons can be learned from the successes and shortcomings of GHM, and these lessons along with the recommendations should be studied by more organizations to improve their own function. As GHM considers its strategic business plan for the future, they will use their strengths to adapt and stay relevant. Most importantly, GHM must continue to provide appropriate solutions to meet the needs in Africa while leveraging the synergies of a global supply chain. This can be achieved if they are able to better utilize the resources available to them, such as TECH. The recommendations made in this paper should be considered using the following questions: what are the costs? What are the values and risks of the change? What are the benefits? Some of the recommendations seem simple and straightforward. Management at GHM is smart and dedicated, but they are currently expending all their energy to make sure approximately 15 full containers make it to Africa in 2007. It is precisely their dedication that will ultimately allow them to create synergies in a collaborative supply chain.

### Suggestions for future research

The focus of this study was on one NGO, GHM. There are many similar non-profit global entities, but GHM seems to be typical. The study only considered aid provided by the USA. There are other countries such as Japan, the UK, Germany, France, and so forth providing significant aid to the people of Africa. It would be beneficial to look at the logistical supply chains of non-profits from other countries that are providing humanitarian efforts in Africa. There may also be value in researching organizations and associations, like TECH, that offer value and assistance to the NGOs managing global supply chains.

### Notes

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2. About USA Freedom Corps and the President’s Call to Service, USA Freedom Corps, available at: [http://freedomcorps.gov/about\\_usafc/overview/index.asp](http://freedomcorps.gov/about_usafc/overview/index.asp)
3. UNICEF-HIV/AIDS and Children, available at: [www.unicef.org/aids/index.php](http://www.unicef.org/aids/index.php)
4. About Care, Care, available at: [www.care.org/about/index.asp](http://www.care.org/about/index.asp)
5. Clinton Foundation HIV/AIDS Initiative, Clinton Foundation, available at: [www.clintonfoundation.org/cf-pgm-hs-ai-home.htm](http://www.clintonfoundation.org/cf-pgm-hs-ai-home.htm)
6. Global Health Grantee Progress, Bill & Melinda Gates Foundation, available at: [www.gatesfoundation.org/nr/downloads/globalhealth/Grantee\\_progress.pdf](http://www.gatesfoundation.org/nr/downloads/globalhealth/Grantee_progress.pdf)
7. African Studies Center, University of Pennsylvania, available at: [www.africa.upenn.edu/home\\_page/country.html](http://www.africa.upenn.edu/home_page/country.html)
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9. GHM, available at: [www.ghm.org](http://www.ghm.org)
10. Stat-USA, US Department of Commerce, available at: [www.stat-usa.gov/](http://www.stat-usa.gov/)
11. Technical Exchange for Christian Healthcare, TECH, available at: [www.techmd.org](http://www.techmd.org)

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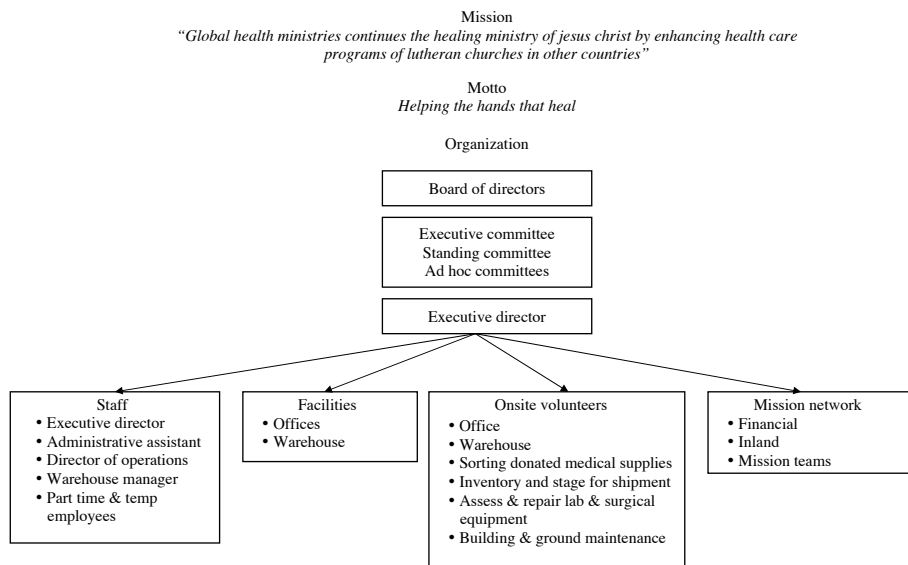
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**Further reading**

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**Appendix**

(The Appendix Table follows overleaf.)



**Figure A1.**  
Global Health Ministries

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**Table AI.**  
GHM Shipping Schedule  
for 2007

Country	Size	Date	Assign	Freight (\$)	Container (\$)	Inland (\$)	Total (\$)
1. Liberia	40	January 20, 2007	Phebe & Curran	6,261		2,000	8,261
2. Tanzania	40	February 17, 2007	Dodoma (DCMC)	7,327	1,850	4,850	14,027
3. Tanzania	20	March 8, 2007	Mwangaza Secondary School	5,760	1,650	3,500	10,910
4. Tanzania	40	March 17, 2007	Selian, KCMC, dispensaries	7,327		4,850	12,177
5. Tanzania	40	April 21, 2007	Nykahanga	7,327	1,850	3,500	12,677
6. Bangladesh	20	May 5, 2007	LAMB & LHCB	4,983		2,000	6,983
7. PNG	20	May 19, 2007	ELC-PNG (Madang)	7,945		4,000	11,945
8. PNG	20	May 19, 2007	Immanuel (Lae)	7,945		4,000	11,945
9. Tanzania	20	June 2, 2007	Gonia, Shighatini	5,760		3,500	9,260
10. Tanzania	40	June 16, 2007	Selian, KCMC, dispensaries	7,327		4,850	12,177
11. Liberia	40	July 14, 2007	Phebe & Curran	6,261		2,000	8,261
12. Tanzania	40	August 4, 2007	Dodoma (DCMC)	7,327	1,850	4,850	14,027
13. Cameroon	40	August 25, 2007	OSEELC	6,118	1,850	12,000	19,968
14. Cameroon	40	August 25, 2007	OSEELC	6,118	1,850	12,000	19,968
15. Central African Republic	20	August 28, 2007	Gallo Climic	6,118	1,650	10,000	17,768
16. Tanzania	40	September 15, 2007	Itula, Lugala	7,327	1,850	4,850	14,027
17. India	20	October 20, 2007	Bethesda	2,781	1,650	1,500	5,931
18. Malawi	20	November 3, 2007	Mobile Clinics	5,400		5,000	10,400
19. Nigeria	20	November 24, 2007	LCCN	5,500	1,650	5,000	12,150
20. Tanzania	40	December 15, 2007	Selian, KCMC, Dispensaries	7,327		4,850	12,177
21. Madagascar	20	NA	SALFA (vin SOA)	3,000			3,000
22. Madagascar	20	NA	SALFA (vin SOA)	3,000			3,000
23. Madagascar	20	NA	SALFA (via SOA)	3,000			3,000
24. Madagascar	20	NA	SALFA (via SOA)	3,000			3,000
25. Tanzania	20	NA	Bulongwa	5,760	1,650	3,500	10,910
26. Tanzania	40	NA	Ilembula, Kidugala	7,327	1,850	4,850	14,027
27. Tanzania	40	NA	Machame	7,327	1,850	4,850	14,027
28. Tanzania	20	NA	Ndolage	5,760	1,650	3,500	10,910
Total				166,413	24,700	115,800	306,913