

Strategies for an Integrated US Industry Response to a Humanitarian Disaster

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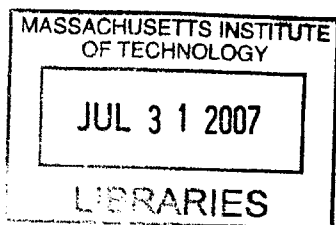
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BARKER

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Abstract

This thesis focuses on developing strategies to improve coordination between private businesses, relief agencies, and the government in order to deliver more efficient and effective disaster relief during major national disasters within the United States. We approached the study of humanitarian disaster relief using three contexts – (1) it focuses on disaster relief for “major disasters” which are defined as an event or events that are sufficiently large in scale and impact that overwhelm local response capacity and resources, (2) the study is confined to the geographical context of the U.S. and (3) it uses the Hurricane Katrina disaster for the insights and lessons learned. Based on literature research, interviews, and case studies, we were able to develop a framework for developing effective partnerships between private corporations, NGOs and relief organizations that would help strengthen disaster relief efforts. We also developed recommendations for further improvements in disaster relief supply chains and other supporting public initiatives.

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1 Introduction

“The federal government should recognize that the private/non-government sectors often perform certain functions more efficiently and effectively than government because of the expertise and experience in applying successful business models. These public-private partnerships should be facilitated, recognized, funded [and] ...the capability to draw on these resources should inform and be part of Federal, State and local logistics systems and response plans.”

- The Federal Response to Hurricane Katrina: Lessons Learned, Feb 26, 2006

This thesis focuses on developing strategies to improve coordination between private businesses, relief agencies, and the government in order to deliver more efficient and effective disaster relief during major national disasters within the United States.

1.1 Scope

This thesis approaches the study of humanitarian disaster relief using three contexts – (1) it focuses on disaster relief for “major disasters”, (2) the study is confined to the geographical context of the U.S. and (3) it uses the Hurricane Katrina disaster for the insights and lessons learned. Although our thesis is directed toward humanitarian logistics in the United States, some research on international humanitarian logistics was also done to provide alternative views.

1.2 Motivation

This thesis is motivated by a genuine interest and desire by the industry to bring to bear their supply chain expertise and capabilities to disaster relief during the occurrence of a major disaster. This thesis was first mooted by Dunkin’ Brands, and throughout the duration of the

thesis research, we received unstinting support and feedback from the many private corporations and non-governmental organizations (NGOs) that we spoke to.

1.3 Methodology

In order to provide strategic recommendations for the future, we first needed to understand the current practices in humanitarian logistics and study the lessons learned from Hurricane Katrina relief operations. We decided to complete a series of case studies on private businesses in various sectors of industry, relief agencies, government agencies and other organizations that play a role in humanitarian logistics. Based on literature research, interviews, and case studies, we were able to develop a framework and recommendations for strategies for an integrated U.S. industry response to a humanitarian disaster.

1.4 Background and Outline

In the aftermath of Hurricane Katrina, many articles, reports and books written on the subject of Hurricane Katrina centered on the failures and inadequacy of the federal government, namely the Department of Homeland Security (DHS) and the Federal Emergency Management Agency (FEMA), State government bodies, and the American Red Cross (ARC) which has been designated to be the primary agency to provide disaster relief within the United States. A number of recommendations called for the reorganization of the DHS, notably to reinstate FEMA's status and autonomy, strengthen ARC's capabilities, and consider the involvement of the U.S. Military. While there were calls for greater public-private partnerships, a holistic and detailed analysis has yet to be done; the direction seems to be toward tuning the current system.

However, in addition to the failures and inadequacies pointed out regarding the emergency response efforts after Hurricane Katrina, we also uncovered many accounts of what

went right, notably small local charity groups and faith-based organizations that became first responders and also stayed on into the recovery phase.¹ Many private corporations worked hand-in-hand and supported these government organizations as well as the large relief agencies such as ARC and America's Second Harvest (A2H). These private corporations contributed in a number of significant ways: from the most basic of donating commodities and money, to providing services such as transportation, to establishing emergency services that are manned by their company volunteers. Mobile kitchens run by SYSCO and mobile pharmacies run by CVS are examples of emergency services that were deployed by private corporations during Hurricane Katrina relief efforts.

The U.S. has perhaps the greatest concentration of the largest, wealthiest and most sophisticated private corporations in the world, which, when woven together, is a great source of capacity, expertise and capabilities that the U.S. government can tap on to construct a more effective and resilient disaster response system. 9/11 and Hurricane Katrina have triggered a turning point in private-public relief partnerships. Private corporations now find that being a socially responsible and contributing member of the community is an essential part of business. Corporate Social Responsibility programs enhance corporate image, build customer loyalty, and increase employee satisfaction and commitment. There is an unprecedented desire and will by private corporations to be part of an initiative that can channel their contributions effectively to a good cause.

Chapter 2 gives an overview of humanitarian logistics and includes insights from various reports on lessons learned from Hurricane Katrina. The chapter also includes insights from literature on the benefits of public-private collaboration in disaster relief and the issues private

¹ Weathering the Storm: The Role of Local Nonprofits in the Hurricane Katrina Relief Effort by Tony Pipa, Apex Institute, 2006.

businesses face when deciding how they want to become involved in relief operations. Chapter 3 includes case studies on two major U.S. relief agencies. Chapter 4 includes case studies on six private U.S. corporations in various sectors of industry. Chapter 5 discusses improvements that are being made in logistics systems and new programs that are being developed to improve humanitarian supply chains. Based on our research and case studies, Chapter 6 describes the framework we developed for what we call a corporate ‘giving’ strategy. Chapter 7 presents further recommendations for government agencies, private businesses, and non-governmental agencies to improve an integrated response to a national disaster based on the findings of our case studies. Chapter 8 provides the conclusion and presents areas for extension of this research.

2 Humanitarian Logistics

This Chapter provides the background on the nature of disaster relief operations, and the U.S. socio-political context in which the thesis is based.

2.1 *What is a Humanitarian Disaster?*

A humanitarian disaster is defined as an event or series of events, whether the cause be flood, drought, earthquake or conflict that result in the lost of lives, displaced populations, communities incapable of sustaining themselves and great suffering.² In most circumstances, humanitarian disasters affect a large number of people and a large geographical area. Whilst not synonymous to, most humanitarian disasters are considered major disasters by virtue of the magnitude of its impact on people.

David Alexander (2002) opines that due to the complex nature and consequences arising from disasters, there is no authoritative definition with quantifiable parameters to categorize the levels of disaster. Notwithstanding, the Robert T. Stafford Disaster Relief and Emergency Assistance Act enacted in 1988 – the prevailing U.S. Federal Law that dictates the system for federal disaster response, defines a major disaster to be:

“caused by any natural catastrophe (including any hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought) or, regardless of cause, any fire, flood, or explosion, in any part of the United States, which in the determination of the President causes damage of sufficient severity and magnitude to warrant major disaster assistance under this act to supplement the efforts and available

² UN in Brief, http://www.un.org/Overview/uninbrief/uninbrief_toprint.html (last viewed May 16, 2007)

resources of States, local governments, and disaster relief organizations in alleviating the damage, loss, hardship, or suffering caused thereby.”³

In essence, only major disasters warrant the mobilization of federal emergency response and resources to augment the efforts by affected States or local authorities. The lack of clear parameters and the subjectivity in determining what constituted a major disaster under the current system were criticized and cited as the plausible causes for some of the confusion between States and the Federal government when dealing with disaster management.

Irwin Redlener (2006) offers a more precise definition:⁴

A Megadisaster is a catastrophic, high-consequence event that
(a) overwhelms or threatens to overwhelm local and regional response capacity, and
(b) is caused by natural phenomenon, massive infrastructure failure, industrial accident, or malevolent intention.

Indicators of capacity overload include the following:

- Inability to manage immediate rescue of endangered survivors.
- Significant backlog of victims unable to get appropriate medical care or other essential support.
- Inability to protect vital infrastructure or significant property damage.
- Uncontrollable societal breakdown.

Whilst Redlener’s used the term ‘megadisaster’, we found the definition to be in congruence and with clearer parameters defined as to what a major disaster should be. A key point in the definition is the issue of capacity overload, as witnessed in the case of Hurricane Katrina where the state governments were simple overwhelmed by the scale of the disaster. We will continue to use the term ‘major disaster’ in the rest of our thesis.

³ The definition of major disaster by the Stafford Act can be found in the National Response Plan (NRP) Department of Homeland Defense, December 2004, http://www.dhs.gov/xlibrary/assets/NRP_FullText.pdf (last viewed April 21, 2007)

⁴ Americans at Risk by Irwin Redlener, Borzoi Book, 2006

2.2 What is Disaster Management?

In the course of our research, Emergency Management has been a generic term used widely in both academic and practice that encompasses Disaster Management as most, if not all disasters, entails short term planning during the immediate aftermath and the employment of emergency services. In recent years, the federal government has introduced a new term known as Incident Management to be used as common term that approaches emergency or disaster management from an all-hazards view. In our thesis, all three terms are used interchangeably although they have some minor differences.

Notwithstanding these variations to the terms and definitions, there is unanimous agreement that disaster management is a continuous process. According to David Alexander (2000), disaster management is described as a 4-phase continuous process, comprising response, recovery, mitigation and preparation. The focus of our thesis is in the disaster relief effort for the response phase which is referred to the period where emergency actions are taken during both the impact of a disaster and the short-term aftermath. The principal emphasis in this phase is on saving and safeguarding human lives, and maintaining the dignity of survivors. The main activities centers on rescuing victims and attending to the immediate needs of survivors.⁵ For ease of usage, the term ‘victims’ would be used in this thesis to mean survivors of a disaster and does not include the dead. Figure 1 shows the 4 phases of disaster management.

⁵ Principles of Emergency Planning and Management by David Alexander, Oxford University Press, 2002

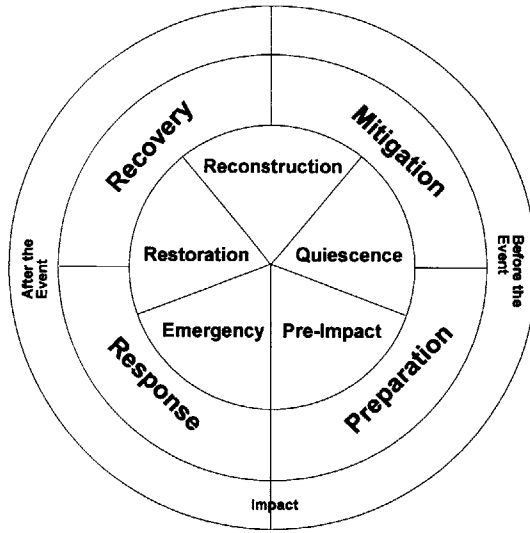


Figure 1: The Disaster Management Cycle⁶

Tony Pipa (2006) states that in extraordinary circumstances, the response phase typically last no more than seven to ten days. This is similar to Vale and Thomas' (2005) model which offers a range of time periods for the first 2 phases of response and recovery for urban cities.

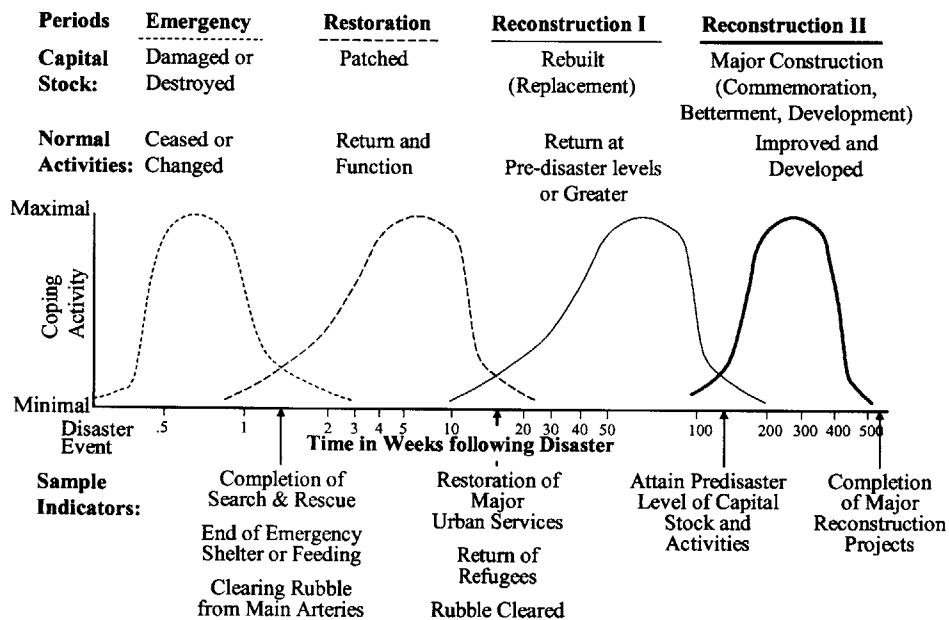


Figure 2: Model of Urban Recovery after a Disaster⁷

⁶ ibid

However, for Hurricane Katrina, the response period lasted nearly 2 months, about 6 times longer than the norm, when using the stretch of time during which emergency shelters remained open.

2.3 What is Disaster Relief?

Disaster relief can be described as the actions taken to provide relief to disaster victims, and is synonymous to humanitarian aid, which is described as the material or logistical assistance provided in response to humanitarian crises, and in our case – major disasters. The primary objective of humanitarian aid is to save lives, alleviate suffering, and maintain the human dignity of the survivors.

2.4 The U.S. Emergency Response Architecture⁸

Enshrined within the U.S. constitutional framework of the federal and state system is the strong identity and sovereignty of the State, and the premise that the administration of all internal affairs of the State is strictly the domain and prerogative of the State. Disaster management likewise inherited this principle with the State as first responders, fully responsible and accountable to carry out all incident management within its State's geographical boundary; the federal government assists or reinforces when requested.

The National Incident Management System (NIMS) and the National Response Plan (NRP) promulgated by the Department of Homeland Defense (DHS) in March and December 2004 respectively are the cornerstones of the U.S. Disaster Response architecture, it defines the

⁷ The resilient city - How modern cities recover from disaster by Vale, L. & Thomas, J., New York, NY: Oxford University Press, 2005.

⁸ National Response Plan, Department of Homeland Defense, December 2004, http://www.dhs.gov/xlibrary/assets/NRP_FullText.pdf (last viewed April 21, 2007)

doctrine, concepts, principles, organizational structures and procedures for managing effective, efficient, and collaborative incident management at all levels for all disciplines with an all hazards approach. Both documents reinforce the earlier concept and role of the State as the first responder.

NIMS. NIMS prescribes an operating system and set of processes that has its roots in military doctrine⁹ with the following key attributes:¹⁰

- Applicable to single or multi-agency operations.
- Top-down modular organizational structure that is scalable.
- Unified Command between functional and jurisdiction lines, as well as between public and private organizations.
- Management by Objectives, use of a single Incident Action Plan and comprehensive Resource Management.
- Mutual Aid Agreements to assure integrated operations between jurisdictions.

NRP. The NRP is an operational manual that prescribes how various federal entities are organized for an incident management situation, their roles and responsibilities, their supporting agencies, and provides guidelines on the procedures with adaptation to seven disaster scenarios that require specialized application of the NRP. The diagram below illustrates the activation process for Federal disaster assistance.

⁹ Emergency Incident Management Systems by Louis N. Molino Sr., Hoboken, New Jersey, John Wiley & Sons, Inc., 2006.

¹⁰ National Incident Management System, Department of Homeland Defense, March 1, 2004.
http://www.nimsonline.com/nims_3_04/index.htm (last viewed on May 8, 2007)

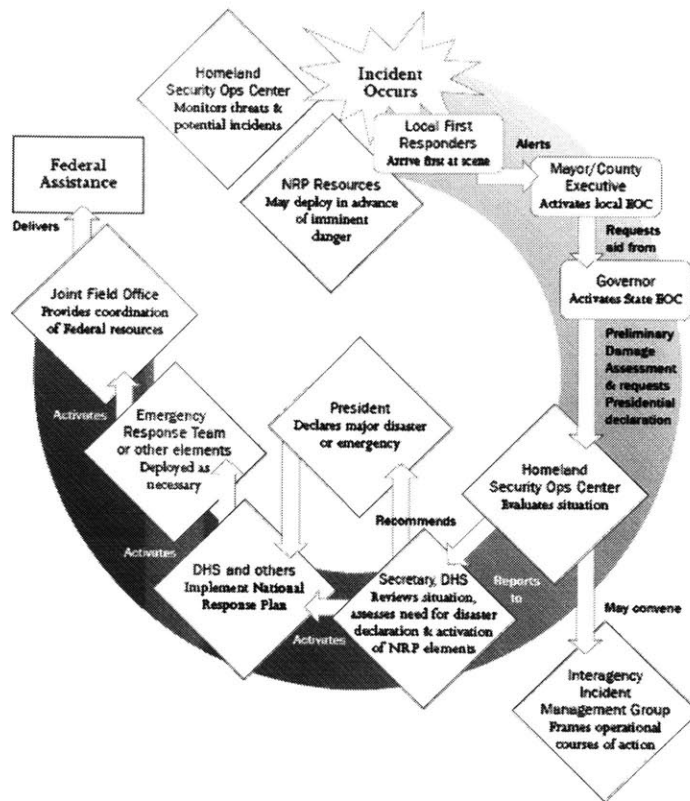


Figure 3: Overview of initial Federal involvement under the Stafford Act 11

The response hierarchy is, by design, an escalatory type, where the state is first to respond; and when it is overwhelmed, the governor of the state in which the disaster occurred must declare a state of emergency and formally request from the President of the United States that FEMA and the Federal Government respond to the disaster. The federal response mechanism is still largely reactive even after amendments have been made to the NRP based on DHS's report on Lessons Learned from Hurricane Katrina¹², although greater latitude is now given for pre-staging of federal resources, such as personnel and supplies, in anticipation of catastrophic events is advocated. The key players and their roles in disaster response are illustrated in the diagram below:

¹¹ Fig 11, National Response Plan, Department of Homeland Defense, December 2004, http://www.dhs.gov/xlibrary/assets/NRP_FullText.pdf (last viewed April 21, 2007)

¹² Notice of Change to the National Response Plan, Department of Homeland Defense, May 25, 2006. http://www.dhs.gov/xlibrary/assets/NRP_Notice_of_Change_5-22-06.pdf (last viewed on May 9, 2007)

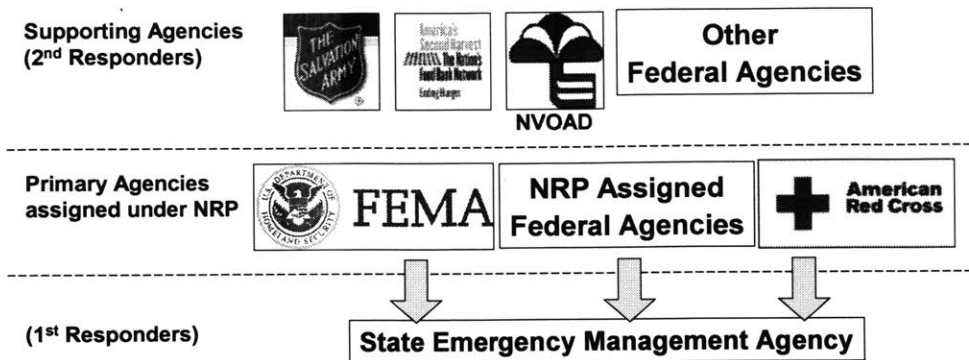


Figure 4: Roles of various Organizations in Disaster Response

A first responder is described as an organization that will be the first to respond on-site to a disaster, examples include firefighters, policemen and nurses. A second responder is an organization that participates at a later stage in a supplementing or supporting role to the first responder. Under the NRP, the State Emergency Management Agencies will always be the first responder. Though not specifically spelt out, when federal assets are forward deployed, they can also be deployed as first responders in coordination with local or state authorities. Other federal agencies, many NGOs and charity organizations make up the 2nd responders.

State Emergency Management Agency. While the nomenclature varies, such as Emergency Management Agency, Governor’s Office of Emergency Services, Governor’s Office of Homeland Security and Emergency Preparedness, each State has an assigned agency that is responsible for disaster management within the state and to implement an all-hazards emergency management program of prevention, mitigation, preparedness, response and recovery. They are the operating staff to the Governor for the proper conduct of incident management when a disaster occurs, and is responsible for coordinating all state and local resources and with federal agencies, NGOs, charity organizations and private corporations.

FEMA. FEMA is the assigned federal agency responsible to coordinate the federal response with state or local authorities to a disaster when it has been declared an Incident of

National Significance. FEMA was formed in 1979 by President Jimmy Carter through the amalgamation of a number of disparate government agencies and functions to provide a single body responsible for disaster management. The roles of FEMA evolved over time, culminating with the passing of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) in 1988 that set the framework of the Federal government's role in disaster response. FEMA was officially absorbed into the Department of Homeland Defense (DHS) in 2003 when the Homeland Security Act was signed into law by President George W. Bush.

American Red Cross (ARC). Under the NRP, the ARC is designated jointly with FEMA as the primary agencies for Emergency Support Function #6 – Mass Care. In this role, the Red Cross with FEMA is to take a lead role in coordinating federal mass care resources to support overwhelmed state and local governmental entities in providing mass care relief services. Mass care relief services include shelter, feeding, basic first aid, disaster welfare information and bulk distribution of emergency relief items. ARC's supporting roles include emergency first aid, supportive counseling and biomedical services such as the supply of blood products.

2.5 Hurricane Katrina

“Hurricane Katrina was one of the worst natural disasters in our Nation’s history and has caused unimaginable devastation and heartbreak throughout the Gulf Coast Region. A vast coastline of towns and communities has been decimated.”

President George W. Bush, September 8, 2005¹³

Hurricane Katrina is considered one of the most devastating natural disasters to have hit U.S. for a number of reasons. It is rated as the third deadliest hurricane with an estimated death toll of

¹³ “Proclamation by the President: National Day of Prayer and Remembrance for the Victims of Hurricane Katrina” news release, White House, September 8, 2005.

1,330 people, of which an estimated 80% of the fatalities coming from the New Orleans metro. An estimated 770,000 people were displaced, and as of February 2006, 2,096 people from the Gulf Coast area were still reported missing. Hurricane Katrina is rated the costliest natural disaster responsible for \$96 billion of property damage.¹⁴ The National Weather Service rated Hurricane Katrina as the third most intense hurricane with winds extending 103 miles that devastated an area of 93,000 square miles – roughly an area the size of Great Britain, and affecting 138 parishes and counties across Louisiana, Mississippi, Alabama and Florida.¹⁵

The vast destruction was wrought by a combination of the effects of Hurricane Katrina and the consequent breaching of floodwalls and levees that caused the massive flooding of New Orleans by Lake Pontchartrain. The storm surge caused severe damage along the Gulf Coast, devastating the Mississippi cities of Bay St. Louis, Waveland, Biloxi, Gulfport, Ocean Springs, and Pascagoula. In Louisiana, the flood protection system in New Orleans failed in 53 different places, flooding 80% of the city and many areas of neighboring parishes for weeks.

¹⁴ National Response Plan, Department of Homeland Defense, December 2004.
http://www.dhs.gov/xlibrary/assets/NRP_FullText.pdf (last viewed April 21, 2007)

¹⁵ NOAA Technical Memorandum NWS TPC-5: The deadliest, costliest, and most intense U.S. tropical cyclones from 1851 to 2006 (and other frequently requested hurricane facts), National Weather Service, National Hurricane Center, Miami, updated 15 April 2007. http://www.nhc.noaa.gov/Deadliest_Costliest.shtml (last viewed May 9, 2007)

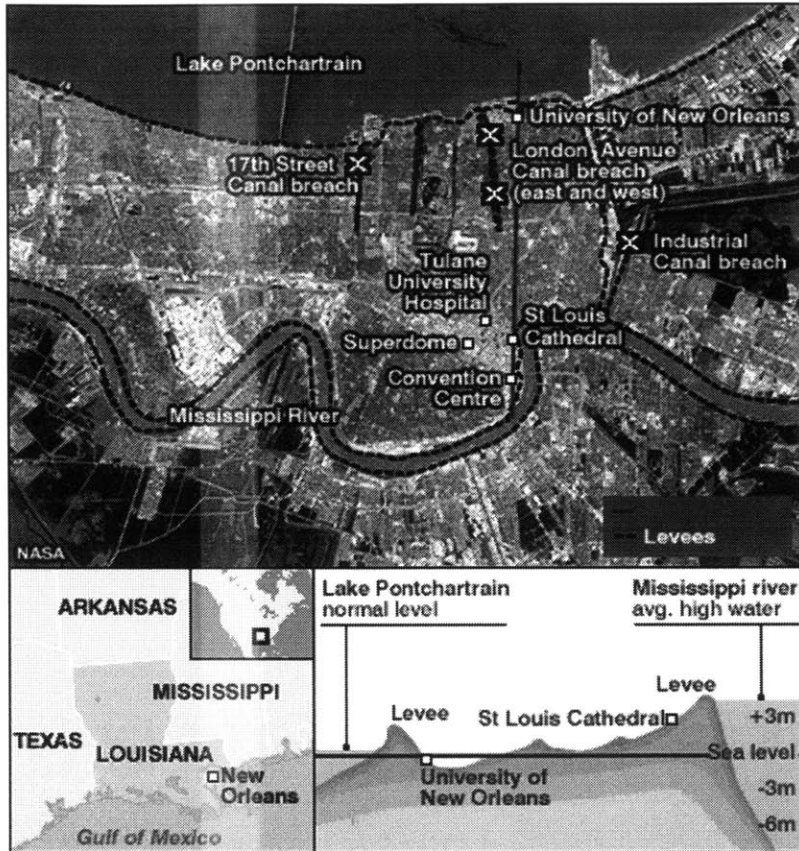


Figure 5: Levee Breaches that caused the flooding of New Orleans¹⁶



Figure 6: Satellite Images of the flooding of New Orleans City¹⁷

¹⁶ Images courtesy of National Aeronautics and Space Administration (NASA).

¹⁷ Ibid.

The challenge is further compounded when Hurricane Rita made landfall just east of Sabine Pass in Louisiana on September 24, 2005, about a month later, causing much anxiety and disruptions to the relief effort. A third hurricane – Hurricane Wilma, with category 5 intensity, threatened the same region but fortunately turned south after making landfall at Florida, sparing the already stricken states.

2.6 *What went wrong with the Relief Effort?*¹⁸

Most criticisms were levied to two main bodies for the dismal relief effort and the resulting huge calamity that was broadcasted nationwide on television. The State was criticized for a lack of leadership and the Federal agencies, namely FEMA, DHS and ARC, for failing to coordinate and bring to bear the huge resources and capabilities they have to the relief efforts. Intelligence failure and flawed information management resulted in poor situational awareness of the extent of the disaster, particularly the breaching of the levees. Consequently, misjudgments and wrong decisions were made that delayed rescue and relief efforts. Bureaucracy was another major impediment that handicapped inter-federal agency coordination for the prompt activation of emergency services and resources. The communications black out caused by the destruction of communications infrastructure by the flooding further compounded the challenges of information flow significantly.

Whilst the scale of Hurricane Katrina disaster was indeed large, it was not unforeseen. In July 2004, the Louisiana Emergency Management Agency hosted a hurricane disaster exercise with participants from FEMA, relevant federal agencies, National Guards and disaster chiefs from local parishes and neighboring states, using a category 3 hurricane scenario codenamed

¹⁸ Disaster: Hurricane Katrina and the failure of Homeland Security by Christopher Cooper and Robert Block, Times Book, 2006.

Hurricane Pam. Unfortunately, follow-up exercises were cut due to funding and the emergency plans were never fully developed. With no adequate plans to handle the demands of a major disaster, the state machinery and first responders were quickly overwhelmed. Although states of emergency were declared by President Bush for all the three affected states prior to Hurricane Katrina's landfall, FEMA's involvement in the immediate response was limited. Only when President Bush declared that Hurricane Katrina to be an Incident of National Significance on August 30, 2006 (2 days after landfall), was FEMA, under the NRP, given the mandate to lead all federal agencies for the relief effort. Even then, there was no effective unified command to direct operation and coordinate the employment of resources from various sources: State, Federal, NGOs, local communities, private corporations and international or foreign assistance. By then, too much time has been lost and large numbers of rescued victims were building up rapidly at the New Orleans' Superdome and Convention Center that had very limited stocks of food and water, was without air-conditioning and insufficient hygiene facilities.

Redlener (2006) criticized the reactive nature of the NRP and rigid top-down doctrine of NIMS for causing the failed federal response. DHS conceded this point as well:

"DOD currently uses a "pull" system that provides support to civil authorities based upon specific requests from local, State, or Federal authorities. This process can be slow and bureaucratic ... From the time a request is initiated until the military force or capability is delivered to the disaster site requires a 21-step process."

Chapter Five: Lessons Learned,
The Federal Response to Hurricane Katrina: Lessons Learned

The national emergency architecture did not anticipate the possibility of the State being overwhelmed by the magnitude of the disaster or temporarily incapacitated as they may be victims themselves; and failed to assume leadership of the relief operations when needed until the State machinery is re-established.

Whilst federal preparation for the 2005 hurricane season was carried out, it was grossly under estimated.¹⁹ Follow through on actions by federal staff were also lacking, resulting in many unfulfilled requests for food, water and transportation assets that are in dire need for the evacuation of hurricane victims.

2.7 Insights from Reports

The Department of Homeland Security produced a total of 125 recommendations for improvements. The key areas for improvement are summarized below:

- Identify and empower lead agency to coordinate and be accountable for an integrated operation for the function they are responsible for.
- Create greater interoperability between federal agencies.
- Enlarge DHS' capacity and capabilities to respond and, to take over the direction of operations when the State is incapacitated.
- Enhance State's capability to respond by strengthening National Guard's role, training and readiness for disaster relief operations.

In the area of logistics, the DHS is to:

"...partner with State and local governments, other Federal agencies and the private sector to develop an efficient, transparent and flexible logistics system for the procurement and delivery of goods and services during emergencies. DHS should develop a logistics system, utilizing an integrated supply chain management approach, capable of supporting large-scale disaster operations by leveraging resources within both the public sector and the private sector."

Appendix A - Recommendations,
The Federal Response to Hurricane Katrina: Lessons Learned

¹⁹ See Appendix A for the Chronological Record of the Build-up of Hurricane Katrina and the pre-landfall preparations.

Specifically, it includes:

- Identify private sector resources that can be leveraged to supplement and provide surge capacity to the Federal support to disaster operations.
- Local and State governments to establish contracts with private sector vendors for disaster relief supplies in advance of an emergency.
- Federal government is to allocate strategic goods and services or conduct re-supply operations during a catastrophic disaster when shortfalls occur.
- Improve planning and coordination between, federal government, State and local authorities, non-governmental organizations, and the private sector.
- Track movement of supplies during a disaster.

Business Executives for National Security (BENS)²⁰, on the invitation by members of Congress to offer advice, produced a report, based on almost one hundred interviews of BENS members and other executives, that identified surge capacity and supply chain management as the two primary areas for improvement and recommended three main efforts:

- Improve government emergency-purchasing protocols.
- Revise deficient donations management systems.
- Modernize logistics processes across the board.

The private sector response in the 2004 South Asia tsunami was unprecedented in its scale of donations – totaling more than \$13 billion, and it also launched the largest relief effort in history. Thomas & Fritz (2006)²¹ opine that this event marks the turning point in private-public partnerships as corporations were not only giving more, but getting involved in seeking effective

²⁰ BENS, an association of more than 500 volunteer business executives, is a national, non-partisan, non-profit organization that is designed to help close the gaps in disaster response and homeland security that neither government nor business can fill alone.

²¹ Disaster Relief, Inc. by Anisya Thomas and Lynn Fritz, HBR November 2006.

ways to make their contributions. Thomas & Fritz (2006) opine that partnerships between private and relief agencies are the way ahead and recommend the following approach on corporate philanthropy:

CEOs must understand the dynamics of the aid sector and make two decisions:

- Do they want to give money or “engage in efforts to improve the aid delivery process at a more systematic level?”
- Do they want to create a strong relationship with one relief agency or do they want to join an already established consortium of businesses and pool their resources together with other companies to extend their impact with many relief agencies?

Depending on the decisions to the above questions, there are four partnership models that are increasing in scope of collaboration between different private corporations and level of partnerships with relief agencies:

- Single-Company Philanthropic Partnerships.
- Multi-company Philanthropic Partnerships.
- Single-Company Integrative Partnerships.
- Multi-company Integrative partnerships.

The experience and findings from our case studies that will be presented in later chapters found congruence with the insights and recommendations captured herein this chapter. Specifically, private-public partnership was repeatedly singled out as having the most significant and direct impact on the effectiveness of contribution. Whilst much was espoused on the benefits of private-public partnership, they stop short of providing a useful framework for identifying the right partners. The case studies provided us insights to develop this framework for effective partnerships using supply chain attributes.

3 U.S. Relief Agencies

This chapter includes case studies on the American Red Cross and America's Second Harvest. They are two of the largest relief agencies in the U.S. and played major roles in the Hurricane Katrina relief efforts.

3.1 The American Red Cross

This case study was developed primarily through literature research on the American Red Cross.

3.1.1 Introduction

The American Red Cross (ARC) is a humanitarian organization that is obligated by its charter to provide 2 essential services: (1) medical care to casualties in a military conflict, and provide information services to military families and relatives; (2) in its non-military role: to be responsible to provide relief to victims of disasters and help people prevent, prepare for and respond to emergencies²². Under the National Response Plan (NRP), the ARC is the only nongovernmental organization designated as a "primary agency". Specifically the ARC and FEMA are jointly responsible for providing leadership in coordinating and integrating overall federal efforts associated with emergency support functions related to "mass care," housing and human services during incidents requiring a coordinated federal response²³.

²² The Red Cross Mission Statement is built on its Congressional Charter and the Fundamental Principles of the International Red Cross Movement. ARC Mission is available at http://www.redcross.org/services/volunteer/0,1082,0_421_00.html

²³ National Response Plan, Emergency Support Function ("ESF") Annex # 6 – Mass Care, Housing, and Human Services.

In this role, the Red Cross' function is to coordinate federal mass care resources to support overwhelmed state and local governmental entities providing mass care relief services. Mass care relief services include shelter, feeding, basic first aid, disaster welfare information and bulk distribution of emergency relief items. ARC's supporting roles include emergency first aid, supportive counseling and biomedical services such as the supply of blood products.

The ARC comprises 800 local chapters and has 35 blood services regions U.S. Wide; it has 35,000 employees and more than 1,000,000 volunteers. The ARC is also a member of the International Federation of Red Cross and Red Crescent (IFRC), through which the ARC participates and contributes to disaster relief at the international level.

3.1.2 The American Red Cross Response²⁴

The ARC mobilized about 245,000 Red Cross relief workers, some of whom were storm victims themselves for Hurricane Katrina's relief effort. Their relief efforts are outlined below:

Shelters. 400,000 homes from Southeastern Texas to the Florida Keys were rendered uninhabitable, creating the largest need for sheltering in U.S. history. In response, the ARC opened more than 1,300 shelters across 27 states and the District of Columbia; coordinated with recreation centers, churches, schools and agencies that provided 3.4 million overnight stays from August to December; and, on FEMA's request, created mechanisms that stabilized additional hundreds of thousands of evacuees in hotels in safe areas and avoided the need to move these evacuees back into the sheltering system.

Mass Feeding. More than 68 million meals and snacks were distributed in the feeding effort. At the height of the effort, the Red Cross, in partnership with the Southern Baptist

²⁴ From "Challenge to Action: American Red Cross Actions To Improve and Enhance Its Disaster Response and Related Capabilities For the 2006 Hurricane Season and Beyond", June 2006.

Convention, served close to one million meals in a single day, the highest ever served in any previous disaster. The amount spent on food and shelter combined for the 2005 hurricane season was \$246 million. The Red Cross also distributed hundreds of thousands of clean-up kits and comfort kits containing personal hygiene supplies.

Medical and Counseling Support. The ARC fielded thousands of licensed medical and mental health volunteers who handled more than 1.7 million cases, ranging from replacing missing medications to counseling the traumatized victims.

Financial Assistance. The ARC processed and gave out emergency financial assistance to more than four million hurricane victims, which helped them purchase urgently needed items such as food, clothing, diapers and other essentials. The estimated cost of this assistance, as of April 2006, was \$1.5 billion. Donations to the ARC totaled \$2.1 billion (up to April 2006), which constitutes half of the total donations towards the Hurricane Katrina relief efforts.

3.1.3 Lessons Learned

The ARC's report²⁵ stated the following reasons for some of the inadequacies in discharging their responsibilities during the 2005 hurricane disasters:

- Poor coordination by the Red Cross with its partners.
- Weakened financial, technology and business systems that had not been sufficiently modernized to accommodate the catastrophic proportion of the 2005 hurricane relief effort.
- Intrinsic chaos in the nature of disaster relief.
- Lack of pre-disaster investment.

²⁵ Ibid

- Misunderstanding the mission and role of the Red Cross.
- The ARC's culture.
- Change in public expectations.

Notwithstanding, in the ARC's random survey of more than 1,500 of their clients, more than 88 percent rated the services they received from the Red Cross during the as good or better.

3.1.4 Supply Chain-Related Shortcomings

The following points are summarized from ARC's self examination of their Hurricane Katrina performance.²⁶

Supply and logistics infrastructure. The Red Cross has a network of donated warehouse space dispersed across the country, stocked with cots, blankets and other basic supplies for immediate sheltering and feeding. In the days immediately following the onset of a disaster, the Red Cross typically establishes temporary field warehouses closer to the actual disaster area, recruits large numbers of volunteers and implements logistics management systems that attempt to scale up to the size required by the event. In such a disaster environment, there is always a tension between providing immediate service delivery and implementing the established management systems and controls. While the Red Cross had internal controls and proven standard operating procedures in place prior to 2005, its systems were not able to scale up sufficiently to completely address the catastrophic scope of the 2005 hurricanes. In order to expedite service delivery, the organization was forced to ship, receive and distribute supplies and equipment before the structure and controls of its logistics systems were fully in place. Moreover, the organization had not implemented a modern asset tracking system, which was

²⁶ Ibid.

sorely needed. Beyond the system itself being stretched, the Red Cross discovered that it did not have enough sufficiently trained and experienced volunteers to run the logistics operations. To complicate matters, in many instances, planned dependencies on government partners did not work well, for a variety of reasons. In short, while the logistics and related Red Cross disaster response systems had repeatedly succeeded during routinely recurring disasters, they were stressed when confronted with the magnitude of Hurricane Katrina.

Unable to cope with Diversity. The Red Cross was challenged to comprehensively and effectively address the needs of diverse constituencies in a vast array of communities. These constituencies included, among others, the elderly, the disabled, African Americans, Latinos and Asian Americans. The ARC was criticized to lack “cultural competence” in its response to Katrina.

Absence of a Central Database created forecasting problems and beneficiary accounting and distribution problems. The Red Cross has a new system called Coordinated Assistance Network (CAN) that shares ‘shelter’ data with other organizations. However, its deployment had been slow and was not fully functional during the 2005 hurricane season. Consequently, the Red Cross was unable to provide up-to-date information on hundreds of shelters opened during Katrina, nor about the individuals registered in those shelters. Over- or under-counting of food and supplies required occurred as a result, making forecasting of aid difficult.

Financial systems and controls. The extensive chapter network is the ARC’s key strength in disaster relief but is also the ARC’s weakness in management, notably in financial systems and control. Each chapter operates autonomously with its own separate financial system, control structure and with personnel with varying levels of financial expertise. As a result, the Red Cross has no real-time visibility of cash and transaction activity, and as these systems are not

integrated, the ARC was not able to derive economies of scale in purchasing products and services, accurate disaster budget assessments and forecasts was difficult, and internal reporting was tedious.

Partnerships. The ARC recognized that during times of disaster, corporate partners want to provide people, products, money and expertise. However, on numerous occasions during the 2005 hurricane season, and indeed over the past several years, the ARC was unable to take advantage of the value that their corporate partner offered for a variety of reasons. In the aggregate, by not capitalizing on proffered corporate and outside expertise, the Red Cross suffered in a number of ways:

- First, the organization's ability to build strong partnerships for the future is undermined.
- Second, by not taking advantage of expertise that exists outside the organization, the Red Cross may miss opportunities to address structural problems and tactical issues using state-of-the-art technology and solutions.
- Third, when the Red Cross decides to address problems/issues using only in-house resources, it may not be employing the most cost effective solutions.
- Finally, not taking advantage of corporate expertise leads to negative public perceptions about the organization. Having a corporate culture of "we know better" can be perceived as arrogant. The resulting loss of confidence and trust translates into reduced financial and in-kind contributions, lowered volunteer support and diminished public trust.

3.1.5 Criticisms of ARC's Performance during Hurricane Katrina Relief Effort

Irwin Redlener (2006) criticized the ARC for the following inadequacies during Hurricane Katrina:²⁷

- Poor accountability of relief funds and aid distribution management.
- Poor coordination with local and state organizations.
- Poor preparation / training and deployment of volunteers, including precious resources such as doctors.
- Poor estimation of the scale of disaster resulting in inadequate supply of essential items, including medicine / drugs etc.

3.1.6 Improvements made since Hurricane Katrina

Improvements have been made in several key areas including: service delivery, operational and business capabilities, and accountability in the Red Cross business systems. Fundamental elements of an effective response are fairly simple: people, materials, systems and coordination. The challenge lies in putting the right materials in the hands of the right people with the right skills and training in the right place at the right time, with the right documentation. The Red Cross has already made significant improvements in its disaster relief program and is far better prepared to meet the challenges of future hurricane seasons. The Red Cross has acted in three key areas:²⁸

Executed a plan of action to improve Red Cross operational and business capabilities. For example, the Red Cross is moving to implement a single, standardized financial management and

²⁷ Americans at Risk by Irwin Redlener, Borzoi Book, 2006

²⁸ American Red Cross, *From Challenge to Action: American Red Cross Actions To Improve and Enhance Its Disaster Response and Related Capabilities For the 2006 Hurricane Season and Beyond* (June 2006).

control system that will include its 804 chapters, national headquarters and 35 Biomedical Services regions. It is building a best-in-class logistics and supply-chain capability that will be integrated with Red Cross financial systems.

Enacted more vigorous internal controls to protect against fraud, waste and abuse. This includes building a stronger culture of accountability and an awareness of how to report and address suspected fraud and misappropriation and creating a series of measures designed to better control its disaster relief casework and financial assistance methodologies.

Created a renewed and refreshed focus on serving communities and building partnerships. The Red Cross will focus on integrating partner groups directly into service delivery, working more inclusively with the diverse community, faith-based groups, civic organizations and other special-interest groups.

Expanded its capacity to meet the needs of disaster victims (since July 2006). ARC has increased the stockpiling of supplies (food, cots, blankets, comfort kits, etc.) in key risk states, which will enable them to serve one million meals and shelter 500,000 people per day in the initial days after a disaster strikes. This represented an additional investment of about \$80 million for supplies and a tripling of ARC's warehouse space around the country. Other improvements made include:

- An increase by one-third the capacity of the information hotline.
- Pre-stocked one million client assistance debit cards.
- Pre-positioned emergency communications equipment (satellite phones, cell phones and radios) in 21 cities in nine coastal states.
- Devised enhancements to ARC's gift processing and acknowledgement system.

- Initiated contracts and agreements to increase feeding support through the utilization of prepackaged meals, such as self-heating “HeaterMeals,” and streamlined its ordering systems.
- Increased the size of ARC’s fleet of ERVs, enabling the organization to feed more people during major disasters.

3.1.7 Longer-Term Improvements

The ARC is committed to build a “best-in-class” logistics and supply chain capability by partnering with a recognized leader in supply chain management to bring its systems and expertise into the ARC. The objective is to devise a modern logistics system that provides real-time information on inventory and supplies, integrates with financial systems, and ties directly to the ARC’s vendors. The ARC is also committed to fully serve the diverse community by more aggressively partnering with the faith-based community, civic organizations and special interest groups to support a more inclusive model of community-based disaster response.

3.2 America's Second Harvest -The Nation's Food Bank Network

This case study includes insights from Diane Letson, Director Food Sourcing and Maria Hough, Director of Logistics, America's Second Harvest.

3.2.1 What is America's Second Harvest?

America's Second Harvest (A2H) – the Nation's Food Bank Network is a non-profit, tax exempt (section 501(c)(3)) organization of food banks and food-rescue organizations that distributes food and grocery products through a nationwide network of certified members. A2H is the largest hunger-relief organization in the United States, serving more than 25 million Americans each year in practically every community across the country. A2H distributes food and grocery products to over 200 food banks in all 50 states, and supports approximately 50,000 local charitable agencies operating more than 94,000 programs including food pantries, soup kitchens, emergency shelters, after-school programs and Kids Cafes.²⁹

When a disaster strikes, the A2H Network works with other relief organizations to provide food and other grocery items to victims. They are equipped to quickly and efficiently provide food, water and supplies anywhere in the country. A2H is always among the first to respond in times of national crisis. In 2005 they signed a memorandum of understanding with FEMA which recognizes the Network as a primary charitable disaster responder. The A2H network is also a member of NVOAD. It provided tremendous amount of emergency food

²⁹ http://www.secondharvest.org/about_us/our_network/

assistance during and after the 2005 hurricane season and is currently still providing food assistance in the Gulf States.

The A2H network is very strong and the staff members are very experienced. They are able to provide relief quickly and efficiently in an emergency due to the existing infrastructure of warehouses, distribution routes and operating agencies used for normal daily operations. The A2H network coordinates with local organizations and federal, state and local emergency management agencies and has developed a strategic plan of action to respond to disasters. This plan includes:

- Supplying food, water, hygiene and household products to impacted areas.
- Identifying and soliciting donors to provide additional items, transportation and services during immediate and long-term relief efforts.
- Securing additional and temporary warehouse space as needed.
- Deploying staff and volunteers to help in facilities in impacted areas.
- Participating in Joint Field Offices near disaster zones to also be used by FEMA and other relief organization staff.
- Lobbying for emergency relief legislation.
- Coordinating technical computer and communication assistance in impacted areas.³⁰

³⁰ America's Second Harvest: 2005 Hurricane Relief Fund Stewardship Report

3.2.2 Overview of 2005 Hurricane Relief Effort

Before Hurricane Katrina made landfall, the A2H network dispatched truckloads of food, water and supplies to be stocked up in A2H network food banks in the southern states in anticipation of possible food aid requirements should the hurricane make landfall. After Hurricane Katrina made landfall, food and other items were quickly channeled from food banks that did not serve an impacted zone to food banks in the hurricane afflicted zone. A key role the A2H network takes on is finding trucks and fuel to transport supplies, and additional warehouse space to handle the distribution of millions of pounds of food and supplies. A nationwide call center was opened to handle the thousands of calls for assistance.

“Since Katrina made landfall, the A2H network has distributed nearly 82.5 million pounds of food – the approximate equivalent of 64.4 million meals, at an estimated value of \$87.4 million, to the Gulf Coast states and southern Florida.”³¹ They raised \$34 million to fund disaster-relief efforts and delivered 2,683 truckloads of donations to the Gulf Coast region. The scale of the response was unprecedented. “To put this in perspective, in 2004, one of the most disastrous years on record with four hurricanes making landfall in Florida, the A2H network distributed just 7 million pounds of food to seven states and Puerto Rico.”³²

Food donations alone were not sufficient to meet the high food aid requirements of Hurricane Katrina. Consequently, the A2H network created the 2005 Hurricane Disaster Relief Fund to raise money to purchase food and grocery items, and also fund long-term recovery projects in the affected states.

³¹ America’s Second Harvest: 2005 Hurricane Relief Fund Stewardship Report

³² A2H: Katrina & Rita Aftermath: The Impact of Emergency Food Distribution and Clients

3.2.3 Transportation Network

There is a number of ways A2H transports food from donors to food banks. During disaster response, the A2H national headquarters in Chicago coordinates most shipments from donors to its food banks and is in charge of hiring contract trucking and coordinating donated trailer space. Less-than-truckload quantities of donations are usually picked up directly by the food banks servicing that local area and donor using the food banks' own private fleet of vehicles. Larger donations are handled through an A2H routing system to determine which food bank is in greatest need.³³ If the donor cannot transport the shipment and a food bank cannot pick up the shipment, A2H contracts transportation with preferred carriers (usually at a highly discounted price) or utilizes donated capacity with a program called Relief Fleet™. The food banks work with hundreds of local charity and faith-based organizations who collect the food aid and distribute it to those in need. The typical transportation process in A2H is as depicted in Figure 7 below:

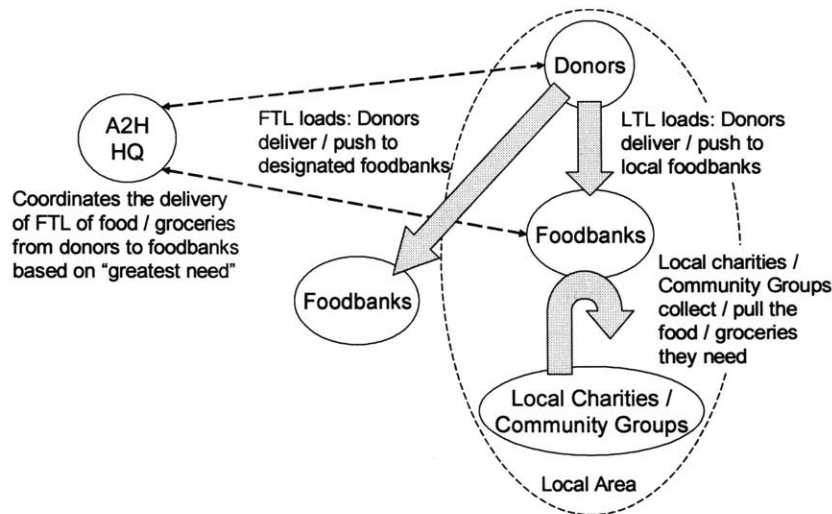


Figure 7: America's Second Harvest Typical Transportation Process

³³ Fleets Deliver Second Harvest.
http://www.nptc.org/index.php?option=com_content&task=view&id=316&Itemid=318

In the early stages of the relief operations for Hurricane Katrina, a lot of transportation capacity was donated, and some donor companies such as Procter & Gamble and Kellogg's® transported their goods directly to the A2H food banks. However, this dwindled over time as the budgeted donation monies of the donating companies ran out and companies returned to normal business operations rather than focusing resources to disaster relief.

One of the problems in getting transportation donated was the lack of financial incentives for companies. There are no tax incentives to donate empty trailer space. A2H is advocating for legislation to allow for special tax breaks or deductions to companies who donated transportation capacity.

3.2.4 Warehousing

During the Hurricane Katrina relief efforts, additional warehouse space was needed due to the following reasons:

- The unprecedented volume of food donations that was required to meet the needs of the people.
- The delivery of unsolicited non-food donations, such as clothes, books and toys, which did not have an immediate need to be matched and were not A2H's core business of distributing food.
- Unscheduled deliveries of unsolicited donations that started to arrive at the food banks caused bottlenecks on the roads, at the docks and loading bays at the food banks.

To avoid overloading the food bank's operations, A2H needed to find warehouses to act as intermediate storage points and provide the additional capacity to absorb the surge in food donations. The warehouse space was also needed to hold the unsolicited donated items until a time when there was a demand or they could be diverted to another NGO that could distribute

those particular types of items. A2H rented a warehouse in Alexandria, LA and was also able to secure an empty Wal-Mart store in Baker, LA and an empty Sam's store in Jackson, MS which was donated by Wal-Mart.

Much of the clothes that were donated to A2H were eventually diverted to the Salvation Army, the Good Will or the Society of Saint Vincent de Paul because A2H's core mission – during normal times and in disasters - is dedicated to the procurement of donated food and groceries.

3.2.5 America's Second Harvest's Operations in Disaster Mode

A2H has a standard operating procedure when dealing with disaster situation that is premised on two basic concepts as described below:

Centralized Planning and Coordination. When a disaster occurs, the Disaster Manager at A2H, Craig Nemitz, is the single point of contact that gathers all available information. He speaks to the affected food banks and consolidates damage assessment and food aid requirements, and then determines the level of involvement, food shipments and procurement required for A2H disaster relief operations. He communicates these findings to the A2H food sourcing team who then coordinates donations. Having the Disaster Manager as the single point of contact to coordinate and assess everything at the onset of a disaster helps with developing a unified plan and simplifies relief operation coordination within A2H.

Decentralized Execution and Local Knowledge. The local food banks are a big asset for A2H in determining food aid requirements due to their long standing operations there, and their familiarity with the demographics and dietary needs of the community. They enable A2H to have a relatively precise assessment of the type, variety and quantity of food aid needed for an area after a disaster. For example, there is a large Asian community in Jefferson, LA that stayed

during Hurricane Katrina and started running out of rice. The local food bank and JFO were able to identify this special need for rice and put a request in to the A2H HQ.

3.2.6 Handling Donations

“A2H, with its Members and Member Agencies, already has the infrastructure in place to feed their community. A2H already has an established relationship with all of the major food and grocery manufacturers and retailers. We handle donated food and grocery items daily. It is what we do.”

- Maria Hough, Director of Logistics, America’s Second Harvest

A2H did not have problems handling donations from product donors and companies they had worked with before. However, they did have some problems handling the calls from average American citizens trying to make donations. Calls from individuals and church groups flooded the A2H offices. Many people tried to donate goods that did not have an immediate need such as flashlights and teddy bears. Unlike some other relief agencies that ignored many calls and treated some individuals rudely, A2H tried to take all phone calls and return calls to all requests. A2H tried to explain to people what items were really needed, that monetary donations were usually the best, and that people should try to donate goods to their local food banks as well because many of their assets were short as they were being donated to the hurricane relief efforts. These phone calls took on average 15 to 20 minutes each and monopolized a lot of the A2H staff members’ time. Local food banks collected community food drive products where they were sorted by local food bank volunteers, then shipped to the disaster area food banks for distribution.

3.2.7 Challenges during Hurricane Katrina Relief Effort

The challenges A2H faced in this major disaster include:

Lack of relief coordination with government agencies. One of the biggest problems A2H faced was trying to coordinate with FEMA. There was little to no information coming to non-government agencies and A2H was kept out of the communication loop which resulted in a lot of confusion and duplication of efforts. Non-government agencies struggled to find out what supplies the government had and where they had it. There even appeared to be a disconnect between staff members within FEMA because sometimes what the local FEMA workers said would happen was different from what FEMA actually ended up doing. For example, there were rumors that FEMA had water but A2H did not know where or if they were going to release it. After Hurricane Rita, A2H sent tons of food donations to the Houston food bank, only to find FEMA showing up with similar products without telling them. When A2H was able to participate in Joint Field Offices (JFOs) in the later stage, significant improvement in coordination was achieved.

Insufficient Handling Capacity. At the local level, individual food banks were already stretched to handle the high volume of donations required to meet disaster needs. The food banks controlled inbound shipments to manage the tight inflow and distribution process given the limited space and labor they had. However, during the Hurricane Katrina relief operations, truckloads would showed up unscheduled and sometimes with unwanted goods, such as those collected from community drives and other personal donation. Food banks could not accept all of the donations due to a lack of space, a fit for the items, and labor whether volunteer-based or paid staff. This overwhelmed their handling capacity and additional warehouse network has to be sourced to supplement the existing storage capacity in the food bank network.

For about the first two weeks after Hurricane Katrina, all of A2H efforts were consumed with meeting the needs of this major disaster. At the system level, A2H struggled to meet the additional needs of the victims affected by the hurricanes and still continue to service the normal programs they have established in other states. A2H found itself stretched to meet the competing demands for food donations and staff / labor to man the food banks and additional warehouses.

3.2.8 Sustaining the Flow: Recommendations for the Future

Given their experiences in Hurricane Katrina's relief operations, A2H has the following recommendations for future disaster support.

Pre-Staging Goods. A2H has a standing procedure of pre-stocking food, water and supplies prior to disasters. Bottled water is the minimum requirement for A2H food banks to have on hand at all times. For Hurricane Katrina this turned out to be very helpful but not sufficient to sustain the needs. After Hurricane Katrina, A2H worked with AmeriCares®, an international disaster relief organization, which was able to negotiate a donation with a water manufacturer for bottled water donations. For the 2006 hurricane season, A2H performed its first pre-staging experiment with Americares® and the contacted water manufacturer. Twenty-two truckloads of water were pre-staged in food banks in Florida, Georgia, South Carolina, North Carolina, Virginia, Alabama, and Mississippi. Fortunately, the bottled water was not needed for hurricane relief operations in 2006 and the water manufacturer agreed to release the water to the food banks for general distribution after the hurricane season had ended. A2H plans to make Pre-Staging a standing procedure.

Education. Educating the American population on what to send and how to send donations in times of emergency is very important. Americans were very generous and there was a huge outpouring of donations, but many items donated were not needed (teddy bears), old

(dirty used clothes), or impractical (golf shoes). The press can play a critical role in educating the public. They did a very good job telling people to donate money instead of items during the hurricane relief operations. Relief agencies can usually do much more with monetary donations than they can do with product donations. The general public needs to be educated that money is the best way to give in times of national disasters.

“We can purchase the food that is needed so that it is ready for immediate distribution. Food donations haphazardly put together from the general public must be sorted; similar to what parents do with their children’s Halloween candy. The parent looks over the candy and disposes anything that may appear spoiled, damaged, or tampered with. We must do the same thing with food drive donations from the general public. Generally, food banks in a disaster area do not have volunteers nor the space available to sort those donated food drive products.”

- Maria Hough, Director of Logistics, America’s Second Harvest

Better Communication. Private businesses duplicated efforts many times during hurricane relief operations because they were not communicating with each other. A model or standard format needs to be created for communication between businesses. Before a disaster strikes, businesses must coordinate and answer what their expertise will be, what they will commit, and who they will work with. If these issues are resolved before a disaster strikes, emergency relief operations will be much more efficient. For relief operations, businesses should specialize in and commit to a different key area they are experts in such as IT, transportation, communication, food or water. Relief agencies can use this information to make their operations more efficient as well.

3.2.9 Changes Implemented after Hurricane Katrina

In addition to working on pre-staging items and better communication, A2H is trying to establish agreements with companies for donated goods prior to a disaster, similar to the agreement they made with AmeriCares for bottled water. They have been working with Abbott Nutrition to

secure donations of formula and Pedialite. Also, A2H purchased truckloads of Presorted Mixed Family Meal boxes that are placed strategically at food banks around the country for disaster readiness. Dunkin' Brands has donated money for A2H to purchase two trailers to be used specifically for A2H disaster relief efforts.

The hurricane relief operations also created a renewed sense of commitment and a renewed interest for A2H members. The food banks realized the huge role they play in disaster relief and a task force was created to come up with recommendations about going forward with relief operations.

4 Industry Response

“A new topic [in disaster response] is ‘cross-industry response.’ The telephone companies can only do so much on their own, because eventually they rely on the power companies, who I turn rely on some other industry such as the transportation industry. [W]e need to consider what happens to the other related industries such as the financial industry, [which is] dependent on the transmission of data among various sites. Working together on a cross-country industry basis is the only truly complete solution.”

- Larry Babbio, Vice Chairman and President, Verizon Communications, Inc.³⁴

This chapter includes six case studies we developed on companies from the U.S. industry. Four of the case studies are on companies in different sectors of the food industry: Dunkin’ Brands, McDonald’s, Chef John Folse and Company, and SYSCO. We also developed a case study on Wal-Mart – the world’s largest retailer, and CVS/pharmacy – America’s largest pharmacy chain. Each case study focuses on how that company supported and participated in the hurricane Katrina relief operations.

4.1 Dunkin’ Brands

This case study was developed with the help of several Dunkin’ Brands employees: Scott Murphy, VP Strategic Supply; Hector Lozano, International Supply Chain; David Gill, Director Strategic Supply; and Dianne Lopez, Strategic Supply.

³⁴ BENS Business Report

4.1.1 Dunkin' Brands Business Model

Dunkin' Brands is a Quick Service Restaurant (QSR) franchisor. Dunkin' Brands owns Dunkin' Donuts, the largest coffee and baked goods QSR chain in the world; Baskin-Robbins, the largest ice cream specialty store in the world; and Togo's, a well-known California sandwich shop.

Dunkin' Brands operates Dunkin' Donuts, Baskin-Robbins and Togo's retail outlets in the U.S. using a franchise format through an operating agreement, a license agreement or a joint venture. It currently has separate supply chains for the three business entities. In Dunkin' Donuts, the franchisees' form their own cooperatives that centralized purchasing, operate DCs, and run a mixture of private fleet and carrier contracted services for the distribution of their supplies. Baskin-Robbins' supply chain is run by a 3PL. For frozen goods, all three business units utilize Direct Store Delivery (DSD) from manufacturers. On average, the stores receive replenishments twice in a week. Dunkin' Brands does not own any inventory; the cooperatives and distributors own the channel inventory until it is delivered to the retail stores.

4.1.2 Finding a Partner in the Established Relief Network

Dunkin' Brands involvement in the Hurricane Katrina disaster relief efforts was the first such commitment it had ever undertaken. It was the personal conviction and effort by Jon L. Luther, Chairman and Chief Executive Officer of Dunkin' Brands, that initiated the corporation's relief effort. Dunkin' Brands started by approaching a number of the major relief organizations such as the American Red Cross, the Salvation Army and America's Second Harvest to find ways for them to contribute. Unfortunately, they were not successful in contacting anyone in the relief agencies and were put on hold a number of times when they got through. The relief agencies were not able to organize or provide adequate information for Dunkin' Brands to contribute

effectively due to the overwhelming response from the American public and other corporations. While Dunkin' Brands was able to donate some items through America's Second Harvest, they found it extremely disconcerting when various food banks "fought over" those donations.

4.1.3 Going Direct – Feeding the Victims

Dunkin' Brands was, however, able to make a direct contribution through John Folse, the owner/executive chef and CEO of six food companies in Louisiana. John Folse is a personal contact of Joe Scafido, Chief Creative and Innovation Officer at Dunkin' Brands. Dunkin' Brands contacted John Folse after hearing his appeal to food companies to send trucks. Chef John Folse & Company is the parent company of several food related industries in Louisiana. Chef John Folse was able to prepare hot meals and funnel them out to churches and food banks for distribution to hurricane victims. Although they only had intermittent communications through cell phones, John Folse was able to tell his plans to Jon Luther and place orders with Dunkin' Brands for all of his needs.

Through John Folse, Dunkin' Brands got in touch with Steve Adcox, the pastor of the River of Life Church in Baton Rouge, LA. who was also distributing food aid through its established network of non-profit organizations and faith-based groups. Dunkin' Brands, having established John Folse and Steve Adcox as its local contacts, was now able to put its competency as a Quick Service Restaurant to use and expand its reach to distribute food aid to more hurricane victims.

Sidebar: Streams of Life Ministry

The Streams of Life ministry, an outreach ministry of the River of Life church, is a non-profit organization that partners with 20 churches and agencies in their area to distribute food to the needy in their local communities. The church and the Streams of Life warehouse are located in the same building complex in Baton Rouge, and during normal operations, Steve Adcox and other volunteers run the warehouse and distribute food twice a month to non-profit organizations and faith-based groups who take that food and distribute it directly to needy families. Over 1 million pounds of food goes through the Streams of Life warehouse every year.

For the hurricane Katrina relief operations, Streams of Life distributed about 3.5 million pounds of food and also provided clothing and shelter to thousands of hurricane victims. To sustain the large scale of relief effort it undertook, eight “18-wheelers” dropped off food at the church warehouse seven days a week for seven straight weeks.

These “local contacts” enabled Dunkin’ Brands to better understand the situation and the scale of the need, and more importantly, what things were needed. Dunkin’ Brands quickly configured its first shipment comprised of approximately 1,200 cases of rolls, pies and bagels. That first shipment reached Steve Adcox about 2 ½ weeks after Hurricane Katrina made landfall; it took Dunkin’ Brands two weeks to find a viable channel to send donations and then a few more days to get the products there.

In anticipation of more demand, Dunkin’ Brands consolidated all relief supplies at its distribution center (DC) in Worcester, MA. Full truck loads (FTL) of mixed products were configured and transported to a Winn Dixie in Gonzales, LA. This Winn Dixie was closed but there was still time on the lease and so it was reopened to be used as a temporary storage facility for hurricane relief efforts. It was operated by volunteers from the Ascension Parish (County) Emergency Management. This facility was used as a store for shelters and any other agencies to come pick up what they needed. In addition to food, clothing, household goods, and

pharmaceuticals were also distributed there.³⁵ Dunkin' Brands made bi-weekly deliveries through this supply chain.

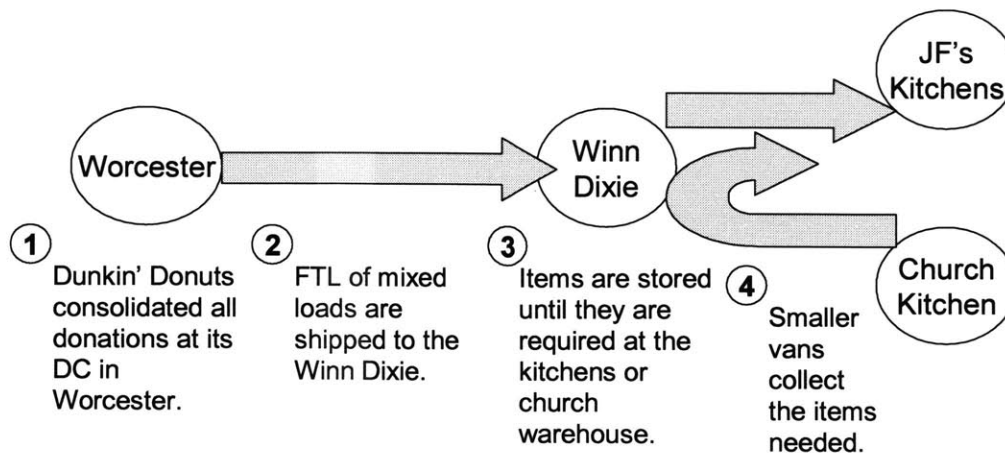


Figure 8: Hurricane Katrina Supply Chain for Dunkin' Brands

The Dunkin' Brands supply chain was not without its challenges during its hurricane relief efforts. Dunkin' Brands, contributed approximately 5,000 frozen panini sandwiches through America's 2nd Harvest, only to find the trucks stranded on the highways in Louisiana because the trucks did not have a destination or a receiving agency who could handle the distribution of the paninis in Louisiana. Eventually, the paninis never made it to the survivors in New Orleans and were diverted to other states with needy families.

Dunkin' Brands did not forget that the people supporting the relief efforts also needed support. They made direct contact with Fort Devons Air Force Base in MA and supplied coffee and donuts for the entire duration of the relief efforts.

Dunkin' Brands organized a team of their top executives and volunteers to make a trip to New Orleans in order to get a firsthand understanding of the extent of the disaster and the need. The party comprised Jon Luther- CEO, Bobby Williams, Scott Murphy- VP Supply Chain, a PR

³⁵ Karen Stassi, Chef John Folse & Company. April 9, 2007.

team, and Ken Kimmel- Baskin Robbins Brand Officer. They distributed Baskin-Robbins ice cream and Dunkin' Donuts coffee to stricken families in the Louisiana Superdome in New Orleans.

A clothes drive was also started within Dunkin' Brands and large quantity of clothes was collected. However, when they had a sufficient quantity to ship, no relief organizations were willing to take them as there was no longer a demand for such items in New Orleans. The clothes were eventually donated to the Salvation Army.

4.1.4 Insights

Dunkin' Brands found that competition between different relief organizations sometimes made it difficult to work with them and caused frustration at times. This hampered their ability and willingness to want to contribute through them. Ground coordination for many relief agencies was difficult and donations were sometimes set aside and eventually failed to be delivered.

Dunkin' Brands found the feeding operations they supported through John Folse and Steve Adcox in New Orleans were the most rewarding because they had an immediate and direct impact on the people of New Orleans. They were able to configure their supply chain, establish the required consolidation points (Worcester DC) and storage areas (Winn Dixie) to provide the supplies needed to sustain the food relief operations. They had control of their supply chain and were able to contribute directly as Dunkin' Brands franchisee cooperatives and third party distributors had the right competency and their own transportation fleets to run this food supply chain.

The most important lessons learned from the experiences of Dunkin' Brands with Hurricane Katrina relief efforts are:

- Proactivity is key.

- Having contacts in major cities is extremely helpful. Their local personal contacts in Louisiana were vital to the great success of their relief efforts.
- In the case of hurricane Katrina, going direct and bypassing the aid organizations was more effective for Dunkin' Brands and had a direct impact to the disaster victims.
- Prior coordination is important. This allows for better communication and a more efficient supply chain once a disaster strikes.
- Not knowing what the victims needed was the one of the biggest hurdles that Dunkin' Brands faced. There was no single agency that was consolidating and making this information available.
- Communication. The destruction of the communications infrastructure and possibly the flood of calls coming out of and going into the disaster area flooded whatever capacity that was available. This created many communication challenges between Dunkin' Brands and the people they were helping in Louisiana.
- Power & Storage. The absence of power in some disaster areas prevented Dunkin' Brands from storing the "quick-to-eat" foods and other perishables in refrigerated storehouses.

4.2 Chef John Folse & Company

This case study was developed in conjunction with Karen Stassi who works in the communications department at Chef John Folse & Company. She was assigned the task of communicating with shelters and donors to help match needs and donations. She also worked with Chris Caballero at their manufacturing plant who communicated with the food companies and scheduled truck deliveries.

4.2.1 Overview of Chef John Folse & Company

Chef John Folse & Company is the parent company of several food related industries. From custom food manufacturing to fine dining and radio, the following is a full description of the vast food related industries Chef John Folse & Company is involved in:

- Lafitte's Landing Restaurant opened in 1978 in Donaldsonville.
- White Oak Plantation in 1986 established Folse's catering and events management division.
- Chef John Folse & Company Publishing, since 1989, has produced seven cookbooks, plus a novel, two children's books and a religious memoir by other authors.
- "A Taste of Louisiana" is Folse's international television series produced by Louisiana Public Broadcasting since 1990.
- Chef John Folse & Company Manufacturing, since 1991, is one of the few chef-owned food manufacturing companies in America producing custom manufactured foods for the retail and food service industry.
- In January 2005 a new USDA manufacturing plant opened in Donaldsonville.

- The Chef John Folse Culinary Institute at Nicholls State University in Thibodaux, LA, opened in October 1994.
- In August 1996, Folse began broadcasting his radio cooking talk show, "Stirrin' It Up."
- Exceptional Endings, the pastry division, was launched in 1996 to create specialty desserts, pastries and savories
- In the year 2000, Folse incorporated Digi-Tek Productions, a full service digital recording studio.
- In 2002, Bittersweet Plantation Dairy opened offering a full line of fresh and aged cheeses.

Chef John Folse & Company's key assets in this disaster relief support were their food manufacturing plant and catering facilities, and their small fleet of trucks that they used to distribute the hot meals they prepared. Other than the Lafitte's Landing Restaurant at Bittersweet Plantation, they do not run any other significant retail or restaurant operations.

4.2.2 Supporting Hurricane Katrina Relief Effort

"John's professional affiliation with food companies and chefs was a huge asset. When he asked they gave and gave and gave."³⁶

Chef John Folse & Company was able to leverage its extensive reach in the food related industry and local presence to provide a lot of relief to hurricane Katrina victims. Their main plant, which sustained minimal damage from the hurricane, is located in the closest major area outside of New Orleans that still had water, power, gas supply, and their phones were partially functional. Consequently, they were able to support several large feeding operations for

³⁶ Karen Stassi, March 2007.

evacuees, relief workers, nursing home workers and shelters, and also coordinate with donors for food and money.

4.2.3 The “Hot Meals” Run

Chef John Folse & Company reached out to all their suppliers for donations of food products that they could use for their “hot meals” operations, and purchased ingredients they did not have with donated money. The items that they had donors and suppliers ship to them include bottled water, juice, milk, meat, sandwiches, vegetables, breakfast foods, soup, convenience foods, as well as raw ingredients. There were also occasions where they received unsolicited donations at their plant. They took what they could use and redistributed the rest via their trucks to shelters or food banks. The volume of inbound shipments quickly exceeded the storage capacity at their manufacturing plant and catering facility, consequently, they diverted shipments to the closed Winn-Dixie that was re-opened and used as an interim storage facility by volunteers from the Ascension Parish. The Winn-Dixie had refrigerated and frozen storage which was critical to sustain the “cold chain” for refrigerated and frozen goods that was essential for Chef John Folse & Company’s cooking operations. Figure 9 below depicts the flow of food products that Chef John Folse & Co coordinated to sustain their “hot meals” operations and food aid to the disaster area.

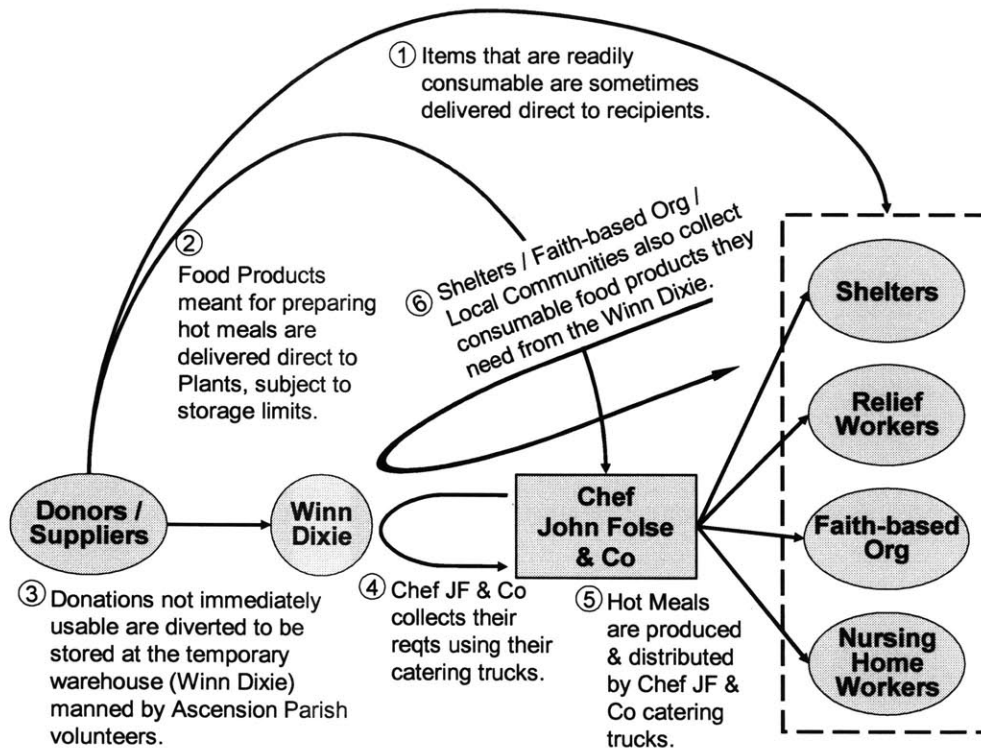


Figure 9: Chef John Folsie & Co’s “Hot Meals” supply chain and food aid flow

To prepare the hot meals, Chef John Folsie & Company primarily used their kitchen in their catering facility at White Oak Plantation in Baton Rouge; the R&D kitchens and bakery at their corporate office in Gonzales; and their R&D kitchen at their manufacturing facility were also utilized to supplement the “hot meals” preparation. The “hot meals” comprised gumbo, pasta, stews, soups, biscuits, rice, bread and cakes that bear the taste of Louisiana – a trademark of Chef John Folsie & Company’s foods. They felt it was important to serve simple, sustaining meals that people recognized. Many of the shelters were being fed military meals-ready-to-eat (MREs) and food prepared by out of state companies. “In Louisiana, we live for food and we wanted to provide comfort as much as sustenance.”³⁷ Chef John Folsie & Company was trying to provide not only body nourishment but also mental solace through their food.

³⁷ Karen Stassi, Chef John Folsie & Company, March 2007

Hot meals were distributed via their catering trucks. They established drop centers at certain faith-based shelters that would notify smaller shelters in the area, this cascading system made food distribution a lot more efficient for all parties. One church, Streams of Life in Greenwell Springs, did a phenomenal job at this. Any food that wasn't claimed by smaller shelters was put into care packages by Streams of Life volunteers and delivered to hotels, houses, etc., in Katrina and Rita-affected areas and the Mississippi Coast.

4.2.4 Challenges Faced During Relief Effort

Dealing with relief agencies was one of the biggest frustrations Chef John Folse & Company faced. There was a lot of bureaucracy and major relief organizations simply did not want to work with them, and told them that their help was not required. For example, one of the major relief organizations claimed it was a liability to accept food from Chef John Folse & Company even though that was the business they are in. This was very disconcerting because people at the shelters were saying there was inadequate food. It was hard for Chef John Folse & Company to have to tell people "no" because the relief organizations had claimed a particular shelter. Some locals initially contacted Chef John Folse & Company and asked them to do a big feeding at a major shelter at the Lamar Dixon center. However, Chef John Folse & Company was eventually told to back off in favor of people the major relief organizations had contracts with. Chef John Folse & Company ended up dealing with the faith-based shelters who either did not qualify for major relief agency assistance or who preferred to do things their own way. Chef John Folse & Company had some donations diverted to the Winn Dixie in Gonzales, where some of the major relief agency shelters came for supplies, so they inadvertently supported the major relief agencies.

A lot of private companies expressed to Chef John Folse & Company that they had wanted to help, but they just did not know whom to contact. Many of these companies said they had also been rebuffed by large relief agencies.

Some other challenges included:

- Communication was difficult during the relief operations because the phone lines were extremely damaged and the need was overwhelming; there were more shelters than Chef John Folse & Company could possibly help. Working out who needed what and how to get it to them was very difficult. It was hard for them to tell shelters when to expect a delivery because communication and traffic problems made scheduling very difficult.
- Lack of storage, especially for refrigerated or frozen items. Most shelters did not have the capacity and Chef John Folse & Company had quickly filled their own capacity. They had to turn down donations and had food go to waste because they did not have storage. Even a national appeal for refrigerated trucks yielded nothing.
- Safety for relief workers. There was no significant police force in most of the affected areas and a lot of theft and even shootings were taking place. It was difficult to reassure companies initially that their trucks and drivers would be safe.
- Problems with loading bays and shortage of manpower. Most shelters and drop centers did not have loading bays, but almost all the trucks that came were 18-wheelers. A lot of manpower was needed to get pallets of donations unloaded.

4.2.5 Improvements for Future Relief Effort

Based on their experiences with 2005 hurricane relief operations, Karen Stassi recommended creating more pre-existing agreements between private companies and relief agencies, having a

back up means of communication, and creating solutions for the shortage of refrigerated storage. It would have helped Chef John Folse & Company if they had a pre-existing agreement with the major relief agencies or at least appeared on a list of approved food donors. Before a disaster strikes, companies need to be proactive and plan how they want to participate in emergency disaster relief and who they want to work with. Companies and relief organizations must also recognize that policies are made to be broken when something unprecedented happens. Relief planning needs to have a two phase approach: the knee-jerk response to get relief there as fast as possible, and the long-term response; recognizing that the need is not just the first week, but for months to come.

4.3 McDonald's Corporation

The following case study was developed in conjunction with Tom Covelli, Senior Director Supply Chain, McDonald's USA, LLC.

4.3.1 McDonald's Business Model

McDonald's is the leading global fast food retailer with more than 30,000 local restaurants serving nearly 50 million people in more than 119 countries each day.³⁸ It is one of the world's most well-known brands and maintains a leading position in the quick service restaurant industry.

McDonald's has about 13,700 restaurants and 40 distribution centers in the US, and operates on a twice weekly replenishment cycle. The entire supply chain is operated by third party companies who run on average 1,100 truckloads daily from suppliers to DCs and DCs to restaurants. In order to cater to the storage and handling needs of different categories of supplies, McDonald's has three distinct supply chains: dry, frozen and refrigerated.

In the US, McDonald's operates on a 15% corporate-owned stores and 85% franchise model. For the franchise model, McDonald's owns the land and the restaurant infrastructure. The franchisee pays rent and service fees to McDonald's for the use of the building and real estate, and for the franchisor infrastructure that McDonald's has put into place to support the McDonald's system needs. The franchisees range from running a single restaurant to as many as 70-80 restaurants, and to date, McDonald's has over 2700 such operators. In the franchise

³⁸ <http://www.mcdonalds.com/corp/about.html> (17 April 2007)

model, McDonald's does not hold any inventory. The franchisees liaise directly with third party companies for all of their replenishment.

4.3.2 Corporate Responsibility

McDonald's has a strong corporate responsibility culture, established by McDonald's founder, Ray Kroc, more than 50 years ago, and sees itself contributing to society in three main ways:

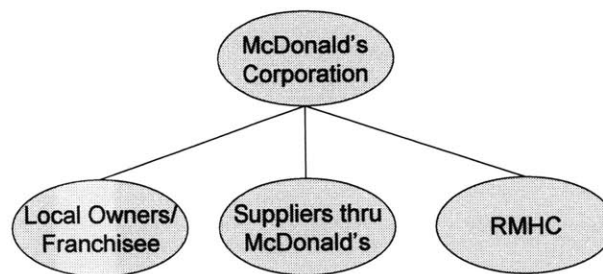


Figure 10: McDonald's 3 Primary Ways for Contribution

- Local Owners / Franchisee. McDonald's believes strongly in giving back to the community that they serve – because it is the right thing to do and it is good for business. Being a part of the local communities, the local operators / franchisees better understand the needs of the community, and they support local programs and charitable causes.
- McDonald's Suppliers. Many suppliers also donate through or under McDonald's ambit.
- Ronald McDonald House Charities (RMHC). RMHC's focus is in supporting and running programs that benefit the children of the local community. They support many programs in the areas of children's health, education, sports and arts.

In addition to charitable giving, McDonald's corporate responsibility efforts also include many initiatives in the areas of environmental practices, animal welfare, nutrition, and education.

4.3.3 McDonald's Contributions to Hurricane Katrina Relief Effort

In response to the devastation caused by hurricanes Katrina and Rita in 2005, the Company donated \$5 million to support relief efforts. They leveraged the strength of their unique system to assist more than 2,000 affected employees of owner/operators, suppliers and the Company.³⁹

McDonald's Corporation was very active in canvassing for donations towards Hurricane Katrina. Many donations and aid were moved through McDonald's for the hurricane relief. Some notable contributions include:

- McDonald's used its Distribution Center at Port Allen, Louisiana to move non-perishable food items into New Orleans.
- On the personal request of Rev. Jesse L. Jackson, Sr., McDonald's coordinated transportation through its 3PL to move supplies collected from the Rainbow PUSH Coalition in Illinois and California to the aid victims of Hurricane Katrina.
- McDonald's made extraordinary efforts to help their store employees and operators get back on their feet and helped with the rebuilding of their businesses.
- Where possible, McDonald's restaurants reopened to provide food, water and shelter to victims and relief workers.
- Ronald McDonald House Charities converted canisters in McDonald's U.S. restaurants to accept donations for disaster relief.⁴⁰

4.3.4 McDonald's Involvement in 9/11 Disaster Relief

The McDonald's franchisee in NY City, NY was very quick to configure and sustain a mobile McDonald's food truck system that provided food to the people who were doing the evacuation

³⁹ McDonald's Corporation 2005 Summary Annual Report, p.26

⁴⁰ McDonald's Press Release 09/10/2005

work in the aftermath of the 9/11 incident. More than 750,000 free meals were served around the clock at McDonald's mobile restaurants at the disaster sites in New York City, at the Pentagon, and in Pennsylvania. The food trucks came in the form of 45-ft-long trucks that delivered McDonald's Quarter Pounders, Chicken McNuggets, bottled water, and soft drinks to feed the work forces there.⁴¹ It was probably because of their demonstrated ability to operate during the 9/11 disaster that McDonald's was invited to NY City's disaster planning team conference.

NY City's disaster planning team was exploring solutions to solve a mass vaccination operation to inoculate the city's people against a potential pandemic such as Avian Flu. McDonald's restaurants, being well known and widely located in the midst of NY city's population density, can be an effective vaccination center network that is supported by an effective supply chain with the capacity and capability to distribute large volumes of vaccines to various locations for a mass vaccination operation. Metroplex, McDonald's distributors in the NY city area, was co-opted as the major supply chain advisor and provider for this plan because of its capability to distribute refrigerated vaccines.

4.3.5 Challenges of a QSR in Responding to a National Disaster

Some of the main challenges that McDonald's face when responding to national disaster include problems with supply chain and transportation capacity. A corporation must ask itself how much capacity it can free up to support national disasters. Many corporations' supply chains have been streamlined to be cost efficient, which meant that very little slack or spare capacity remains.

⁴¹ McDonald's 2002 Corporate Social Responsibility Report page 14

McDonald's currently has some excess capacity due to restaurants not willing to receive supplies at night.

The main bottleneck in disaster relief may be the shortage of transportation capacity. There is currently an industry-wide shortage of drivers, and it is likely that any spare capacity would be quickly exhausted in disaster relief operations. Price increases due to the shortage made it very difficult for relief agencies to fund transportation for donations. It also made regular trucking operations very expensive for many companies because most spare capacity was being sent to the hurricane relief.

4.4 SYSCO

This case study was developed with the help of Neil Theiss, AVP Supply Chain Management; Keith Miller, President of SYSCO Houston Operating Company; and Sandra Carson, Senior Director Occupational Health, Safety and Claims.

4.4.1 Introduction

SYSCO (Systems and Services Company) began as a company that supports foodservice operators in providing consumers with solutions for meals consumed away from home. Over time, it grew in scale and expanded into the distribution of food, food-related products and services to restaurants, nursing homes, hospitals, hotels, motels, schools, colleges, cruise ships, sports parks and summer camps.

Today, SYSCO is the largest foodservice marketing and distribution organization in North America, providing food, food-related products and services to approximately 390,000 restaurants, healthcare and educational facilities, lodging establishments and other foodservice customers, generating sales of \$30.3 billion for the fiscal year 2005 that ended July 2, 2005. SYSCO's operations, supported by approximately 44,000 associates, are located throughout the United States and Canada and include broadline foodservice distribution companies, specialty produce and custom-cut meat operations, Asian cuisine foodservice distributors, hotel supply operations and chain restaurant distribution subsidiaries.

4.4.2 SYSCO's Operating Model

SYSCO has a total of 172 distribution locations, three Redistribution Centers (RDC) and the largest private transportation fleet in the industry that runs all of SYSCO's outbound deliveries to

customers. SYSCO's distribution companies operated as autonomous business units, the managers of each distribution company has great latitude in making decisions in sourcing, operations and serving the customers. They are accountable to the SYSCO Corporation primarily for its profits and loss. A unique feature of SYSCO operations is that its distribution companies operate on a very short delivery cycle, 80% of their deliveries are less than 24 hours order cycle, and as such, they have high inventory turnover and a low level of 'sitting inventory' or very little spare capacity. They depend a lot on the effectiveness of its supply chain to deliver the necessary supplies they need to run their daily operations. In recent years, SYSCO has embarked on an initiative to enhance its supply chain operations. The establishment of RDCs was to support distribution companies in bulk sourcing, inventory management, SKU standardization and pre-packaging. To some extent, the inbound supply chain decisions are being centralized and consolidated to achieve significant cost savings.

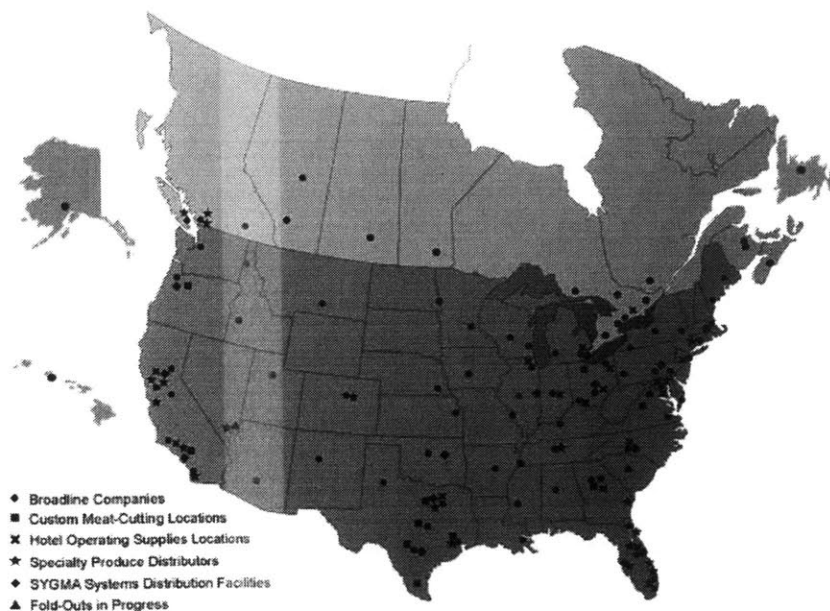


Figure 11: Locations of SYSCO companies and operating locations in North America

4.4.3 SYSCO's Contributions in the Hurricane Katrina Relief Efforts

SYSCO's business operates on a decentralized mode with autonomous business entities that were empowered to make business and 'giving' decisions on their own. The contributions recorded herein are those that were captured by the Headquarters or by the individuals who were involved directly or indirectly.

SYSCO had 2 facilities that were affected by Hurricane Katrina, one at Jackson, Mississippi and another at New Orleans, Louisiana.⁴² The facility at Jackson, Mississippi was closed only for a few days, whilst the New Orleans facility was reopened on 19 September, almost 3 weeks after Hurricane Katrina struck the region.

New Orleans, Louisiana. The facility in New Orleans escaped with minor damages but lost all its power. SYSCO Corp sent in a recovery team comprising the VP of Distribution plus three other employees to the facility. Their primary objectives were to establish how badly damaged the facility was, re-establish power supply using the facility's backup power and salvage whatever they could. The recovery team brought in trucks as their fleet in New Orleans was damaged and rendered inoperable. They were successful in re-establishing power supply and save the bulk of the inventory there. They donated the bulk of their frozen and refrigerated products to Chef John Folse's kitchen in Baton Rouge that provided cooked meals to survivors there, some ready to eat goods such as yogurt and fruits were dropped off at American Red Cross locations. The recovery operations were not easy as gun shots were commonly heard which raised many safety concerns. There were also no proper sanitary or sleeping facilities, and the recovery team had to make do with whatever amenities they had.

⁴² SYSCO Press Releases, <http://phx.corporate-ir.net/phoenix.zhtml?c=86717&p=irol-newsArticle&ID=758421&highlight>

Lake Charles, Louisiana. On a separate initiative with the American Red Cross, SYSCO refurbished three trailers into self-contained mobile kitchens. Each mobile kitchen has the capacity to turn out 9,000 hot meals per day so long as water, power and food supplies can be sustained. These mobile kitchens first operated at Lake Charles, Louisiana and provided hot meals to the displaced citizens. SYSCO's involvement in humanitarian aid was done mainly through the American Red Cross.

4.4.4 Challenges in Hurricane Katrina Relief Efforts

SYSCO identified 3 key challenges they faced:

Transportation Capacity. Despite SYSCO having the largest private fleet, it was not able to mobilize the fleet that was in the immediate vicinity as it was rendered inoperable by the flood waters. SYSCO had to charter trucks from its carriers to mount its recovery operations at the New Orleans facility. The chartered trucks were not easy to come by as FEMA and the American Red Cross had sucked up much of the spare transport capacity in the region by paying high rates. It was because of the strong business relationship that SYSCO had with its carriers that it was able to secure some transportation for their recovery operations.

Inventory. SYSCO's business units operate with a low sitting inventory, and as such, it would not be able to last a significant period of time when a large scale disaster occurs. The key lies in transportation to sustain the supply of essential items.

Communications. SYSCO found that communications was the greatest stumbling block in the relief operations for Hurricane Katrina. Satellite phones were the only way they were able to communicate with their people in New Orleans. They also found it very difficult communicating with the American Red Cross, the local authorities and FEMA to

find out what exactly was needed, and where they could deliver what they had to offer. It is speculated that the scale of response overwhelmed these relief agencies, and many organizations went on their own initiative to find partners who had use of what they could offer, as in the case of Chef John Folse & Company's kitchens.

4.4.5 Strengths of SYSCO for Humanitarian Support

SYSCO identified 4 key attributes of their business that are of value to humanitarian relief within the U.S.:

Extensive Distribution Network. SYSCO's large footprint of broadline companies and distribution locations gives it a substantial reach throughout the country that can provide support in times of an emergency.

Private Transportation Fleet. One of the greatest assets that SYSCO has is its transportation fleet which has intimate knowledge of the region they serve, especially the local road networks. SYSCO is proud to state that they never failed a delivery in Buffalo, NY and this is despite the many snow storms and snow-ins the city experiences. SYSCO drivers have intimate knowledge of the local road networks, the necessary driving skills under such conditions and have also established a special relationship with the local police. This is because the local authorities recognized that SYSCO's deliveries, which comprise food and water, are essential life sustaining items that are critical during times of bad snow-ins. The authorities allow SYSCO to operate for the benefit of people who may be stranded and seeking refuge at locations that SYSCO is delivering to.

Multiple Inventory Locations. This provides two advantages – the first is resilience meaning that its inventory is not all in a single basket which can be incapacitated if a disaster hits that single facility. The second advantage is that response can be prompt as

supplies can be pulled from the nearby distributions locations and RDCs first. This is useful for first response support.

Local Knowledge. The traditional autonomous culture of SYSCO has allowed its business entities to build strong relationships locally and gain intimate local knowledge. This facilitates smooth operations during crisis.

4.4.6 Thoughts on Building an Industry Response Capability

SYSCO share the following points on what are required to build an industry level response to humanitarian disaster:

- The American Logistics Aid Network initiative is a good idea and would hopefully bridge the gap between matching the need with donations.
- The local governments must develop a disaster response plan, communicate it effectively and have drills that will ensure everyone knows what to do when called upon to do their part.
- To develop partnerships early so that resources can be activated and secured when it is needed. We should avoid creating big swings in the industry when a crisis occurs, as in the transportation segment during Hurricane Katrina relief operations.
- It is also opined that major retail operators will have greater capacity to respond as they hold substantial inventories both in their retail outlets and also within their supply chain. Also, a large part of their products are also made for ready consumption, which can be readily used by displaced citizens.

4.5 CVS/pharmacy

"We are working with our peers in the retail pharmacy industry and with the pharmaceutical industry to provide comprehensive relief for Hurricane Katrina victims. In our discussions with state, local and federal officials, access to prescription drugs has been identified as a key and immediate component of relief efforts. As America's largest pharmacy, we have the expertise to help relief agencies provide healthcare services to the victims of this disaster. Right now, we are focusing all our resources on providing help to the greatest number of people in the impacted area as quickly as possible,"⁴³

Eileen Howard Dunn, Vice President of Community Relations CVS/pharmacy

This case study was written based on CVS/pharmacy (CVS) press releases and internal management reports, with additional inputs from Leo Hartnett, Vice President CVS/pharmacy; Michael J. DeAngelis, Manager of Corporate Communications; Jennifer H. Veilleux, Director of Community Relations; and Greg J. Sciarra, Director of Pharmacy Technical Services.

4.5.1 CVS/pharmacy's Business Model

CVS is America's largest retail pharmacy, operating more than 5,400 retail and specialty pharmacy stores in 37 states and the District of Columbia. CVS has had 40 years of dynamic growth in the retail pharmacy industry and aims to be the "easiest pharmacy retailer for customers to use". CVS has created innovative approaches to serve the healthcare needs of all customers through its CVS/pharmacy stores, its online pharmacy – CVS.com, and its pharmacy benefit management, mail order and specialty pharmacy subsidiary – PharmaCare. To sustain its retail operations, CVS runs its own network of DCs and RDCs, and operates a mixture of private transportation fleet and carrier contract services.

⁴³ CVS/pharmacy Deploys Additional Pharmacy Resources to Hurricane-Impacted Gulf Coast, CVS Press Release, 9/2/05.

4.5.2 CVS/pharmacy's Contributions in Hurricane Katrina Relief Effort

CVS donated approximately \$1.2 million in supplies and money⁴⁴ to hurricane victims through the American Red Cross and other local relief organizations. On top of medical prescriptions, CVS also distributed water, ice and personal care items – goods that CVS carries in their stores. CVS made use of its extensive network of retail pharmacy outlets and its ready mobile pharmacies which they can deploy in short notice to distribute prescription drugs.

CVS Stores as a distribution network. CVS has about 160 CVS/pharmacy stores located in the Hurricane Katrina impact area, of which only nine stores that were badly damaged remained closed. Most stores opened the next day after the hurricane or within a few days. Many stores operated long hours to try to serve the community; CVS stores in Baton Rouge, Louisiana, operated 24 hours a day to cope with the surge demands caused by the massive influx of hurricane victims.

Mobile Pharmacy Operations. CVS deployed a total of four mobile pharmacies for the relief effort as a quick response to provide prescription drugs. Two were deployed at the Houston Astrodome, one at the Convention Center in Texas and one at Kelly Air Force Base in San Antonio, Texas.⁴⁵ The first mobile pharmacy that was deployed at the Astrodome was coordinated by the local medical director who was coordinating efforts at the Astrodome. All subsequent responses were initiated through the Center for Medicaid/Medicare Services (CMS), specifically Larry Kocut - Assistant Director of CMS.

A total of 25,000 prescriptions were filled in slightly over 2 weeks of operations (compared to an average of 1,600 prescriptions per week for a typical CVS store) from these

⁴⁴ This does not include the cost of personnel, trailers and other supplies needed to staff and operate the mobile trailers; and shortfall in reimbursements from the Government or other sources.

⁴⁵ CVS/pharmacy Completes Emergency Mobile Pharmacy Operations at Houston Astrodome as All Evacuees are Relocated, CVS Press Release, 9/16/05.

mobile pharmacies. This mobile pharmacy idea was conceived after a CVS burned down in the early 1990s. CVS has a total of 30 ready-to-deploy mobile pharmacy trailers at a warehouse in Texas that are fully equipped with computers, medications and prescription bottles.



Figure 12: Backroom of a Mobile Pharmacy operating from a trailer



Figure 13: Dispensing Counter of a Mobile Pharmacy operating from a trailer

Sidebar: Houston Astrodome Mobile Pharmacy Operations

The Houston Astrodome was designated as a shelter of last resort for New Orleans residents who did not or could not heed an evacuation order before the storm. First evacuees arrived at 11:30pm on September 01, on a bus that was driven by a 14-year-old. Medical screening and operations began in earnest with doctors seeing 150 patients an hour. Houston's healthcare system was considered a model, however a critical component failed. Drugs and medical supplies that were supposed to arrive through a federal deployed Disaster Medical Assistance Team did not materialize. The medical co-director, Dr Kenneth Mattox, had to take supplies from his hospital's pharmacy to tide over the night's medical operations. Fortunately, the first CVS mobile pharmacy reached and deployed at the Houston Astrodome the next morning (September 02) with 20 pharmacists ready to provide medications free.

U.S. News and World Report, Vol. 139, No. 10 Drugs, Bandages, and Empathy
by Amanda Spake, September 19, 2005

By Sep 16, when all evacuees had been relocated to other facilities and the Astrodome temporary shelter operation had ceased, CVS's 2 mobile pharmacies had filled more than 20,000 prescriptions for 7,000 evacuees – 90% of these prescriptions were filled in the first 72 hours. The mobile pharmacy operations at the Astrodome was the highest in number of prescriptions filled, constituting 80% of the total prescriptions filled by CVS's mobile pharmacy operations.

4.5.3 The Drug Chain Response Effort

“With the help of CMS [Centers for Medicare and Medicaid Services] and HHS [U.S. Department of Health and Human Services], a working team of other Retailers (WAG [Walgreens], RAD [RiteAid], HEB [H.E. Butt - a Texas Grocery Chain], Wal-Mart, etc.) was put together and coordinated the Drug Chain response effort.”

Extracts from CVS/pharmacy Quarterly Management Meeting

The Centers for Medicare and Medicaid Services (CMS) was the lead federal coordinator for the drug chain response effort. The collaboration included FEMA and CMS at the federal level, State Medicaid agencies, Governors offices and health departments at the State level, and the local health departments, charitable organizations, police etc at the local level together with all the major chain pharmacies, supermarkets and regional chains.

CMS tried to establish the requirements for each specific region, incorporating whatever specific requests for services that they received. These requirements were then matched against the pooled resources of all the pharmaceutical companies for each locality. i.e. the companies coordinated their efforts based on where their store was located as well as the resources they had available in that area. In several cases, especially in high population concentration areas, multiple companies serviced the same locations to ensure that patients’ needs were met. Where there were shortfalls, companies would mobilize their supply chains to replenish the required drugs to the locations as quickly as possible. In areas where there were no outlets, mobile pharmacies such as those provided by CVS filled the gap.

Control Issues. Most hurricane victims lost their medication and were without their medical prescriptions. And for many patients who were undergoing long term medication, a pause in their medication could have serious health consequences. In the immediate aftermath of Hurricane Katrina, the State boards of pharmacy temporarily lifted the normal restrictions on the dispensing of drugs. All participating pharmacies could fill prescriptions for all hurricane

victims if they had a doctor's prescription, when one was absent, the nurse or pharmacist would, to their best professional knowledge, issued the required drugs.

Despite of this temporary relaxation in controls, CVS was not concerned about abuses or legal ramifications as the agreement had been worked out with the state and local board of pharmacies and they were also confident of the professionalism and judgment of their pharmacists and the documentation processes that they had in place to manage such situations.

Payment Issues. In terms of payment, when possible, the patients' insurance was utilized. In the absence of insurance, the next priority was the voucher program set up by ARC and CMS. If victims did not have access to those programs, CVS and all participating pharmacies did implement a process whereby victims received their needed medications at no charge. In some instances, the drugs were given free as they were donated by manufacturers.

CVS Care Package. CVS developed the CVS Care Package in early 2005 based on their experience during the 2004 hurricane season. The items contained in the package were determined by CVS Community Relations Team, assembly and packing of the kits was handled by Gifts in Kind, a non-profit agency that helps companies manage product donations. CVS maintained a stockpile of 5,000 CVS Care Packages in Virginia ready to be used when a disaster strikes. 2,500 CVS Care Packages were eventually mobilized and distributed to hurricane victims – 1,500 to the Gulf Coast, and 1,000 to Texas, Virginia and Georgia where many hurricane victims were taking refuge.



Figure 14: CVS/pharmacy Care Package.

(Package contains 18 essential personal care items such as toothbrush and toothpaste, soap, shampoo, shaving cream and razors, hand lotion, bandages, sanitary pads, facial tissues, anti-bacterial moist wipes, hand sanitizer, sun block, chap-stick and first aid ointments.)

CVS received very positive feedback from both hurricane victims and relief agencies, commenting that it was a handy all-in-one essential personal hygiene and healthcare pack. Consequently, in 2006, CVS increased its stockpile to 25,000 packs, dispersed its storage into 5 distribution centers in Florida, Virginia, Texas, Rhode Island and California, and enhance the delivery speed by assigning a unique CVS item number for the Care Packs. CVS is also in talks with ARC on fine-tuning the Care Packs.

4.5.4 Challenges Faced During Hurricane Katrina Relief Effort

CVS cited forecasting the actual product needs and quantities as the single key challenge during the Katrina relief effort. The single largest frustration was with the information transfer to and from the local levels to provide the necessary demand or needs visibility of the community; and then also to coordinate the local responses. In some cases multiple relief agencies were providing support to a community that in fact was over supported while other communities were underserved. This was despite CMS's organized effort in centralized and unified approach in planning the drug chain response, and CVS's deployed field management teams at the localities that provided feedback on a daily basis. Nonetheless, CVS's existing distribution channels and

outlets were sufficient to get the products to meet the majority of the needs. CVS was not aware of any locations that the combined retail pharmacy could not support during the relief effort.

CVS opined that the largest area for improvement is in having a system that funneled up information from the local levels to the federal level in a quicker and concise format. There was some frustration within CVS and CMS that needs were not surfaced quickly enough when resources were available to deploy.

4.5.5 Key Strengths in a Humanitarian Disaster Relief Situation

CVS identified the following attributes of their company as value to a disaster relief:

- Availability of key health and wellness related products. Availability is assured through: (1) the numerous retail outlets that they have in the disaster areas that carries the inventory; (2) CVS rapid deployable Mobile Pharmacies; and (3) CVS Care Packages that made it simple to move and distribute.
- Supply chain infrastructure including transportation capabilities, the broad network of Stores and Distribution Centers.
- Corporate culture of supporting the communities where we do business.

4.5.6 Ongoing Efforts

Since Hurricane Katrina, besides expanding on the CVS Care Package initiative, CVS has also been busy to enhance its ability to respond to disaster relief efforts.

Increased Engagement with Local Authorities. Working with government bodies and relief organizations has always been part of doing the retail pharmacy business in CVS. Since Hurricane Katrina, CVS has experienced an increase in state and local governments attempting

to pull together “Emergency/Disaster” response plans and CVS has been working with each request to try and meet their needs.

Emergency Response Readiness. CVS maintains an emergency response team as a course of business. Given CVS’s geographic footprint and the unpredictability of emergencies, the emergency response team is kept occupied throughout the year. The Mobile Pharmacy assets are always active and ready to deploy, as they are used to meet any other emergency situations when structural damage has occurred to an existing CVS location, which could be due to store fires, earthquake, hurricanes and etc. This emergency response system “never gets cold”.⁴⁶

⁴⁶ Comments made by Leo Hartnett and Greg J. Sciarra.

4.6 Wal-Mart

This case study was developed through news coverage of relief efforts, American Red Cross publications and Wal-Mart's press releases.

4.6.1 Wal-Mart's Background and Business Strategy

Wal-Mart Stores, Inc. is currently the world's largest retailer. In the U.S., it is the largest grocery retailer with an estimated 20% of the retail grocery and consumables business, and also the largest toy seller with an estimated 45% of the market share.

Wal-Mart's business strategy is to be a cost leader and provide low price commodities and services to consumers. Its "always low prices" strategy, which has guided Wal-Mart since 1962, has seen it adopt a "one-size fits all" strategy in order to reap economies of scale and force low prices from suppliers. This strategy is being revised to a consumer-segmented strategy designed to reflect the six demographic groups – African-Americans, Hispanics, the affluent, "empty-nesters/boomers", suburbanites and rural residents, which they primarily serve.⁴⁷ This change comes in response to its slowing sales growth indicated by lagging sales growth of its older stores when compared to competitors such as TARGET; and for the first time in decades, sales fell during the 2007 first quarter holiday season.

4.6.2 Wal-Mart's Operating Structure

Wal-Mart has an extensive footprint in the U.S. with more than 4,000 stores nationwide. Table 1 below provides a summary of the types and numbers of stores it has.

⁴⁷ Wal-Mart to drop one-size-fits-all approach, CNBC News, September 07, 2006. <http://www.cnbc.com/id/14714027/for/cnbc> (last viewed May 20, 2007)

Table 1: Summary of Wal-Mart's Retail Stores as of March 31, 2007

Wal-Mart range of stores	Average Store Size	Product & Service Range	Number of Stores (as of March 31, 2007)
Discount Stores (Department Stores)	102,000ft ²	Includes general merchandise products and a selection of food items. garden center, a pharmacy, Tire & Lube Express, optical center, one-hour photo processing lab, portrait studio, and a fast food outlet, some may have gasoline stations.	1,063
Supercenters (Hypermarket or multi-department store)	197,000ft ²	On top of the full range of products and services it has in its discount stores, it also carries a full-line supermarket.	2,285
Neighborhood Markets (Grocery Chains)	42,000ft ²	Full-line of groceries, pharmaceuticals, health and beauty aids, photo developing services, and a limited selection of general merchandise	116
Sam's Club (Warehouse Clubs)	128,000 ft ²	Merchandise are sold in bulk and directly off pallets. Clubs are arranged much like a warehouse, with merchandise stocked in warehouse-style steel bins.	582

Wal-Mart's retail network is so extensive that only small pockets in the U.S. are further than 60 miles away from the nearest Wal-Mart.⁴⁸ Wal-Mart continues to own and operate the majority of its distribution functions for all its businesses, although it began out-sourcing some of its supply chain functions as early as 1999, when it engaged Fingerhut Business Services Inc, a 3PL, for its online business. It currently operates over 100 domestic distribution centers and a private trucking fleet.

At the retail level, store managers are empowered with decision-making powers. In Wal-Mart's 2006 Annual Report, the emphasis on empowering the ground is evidenced in their

⁴⁸ Wal-Mart Nation: Mapping the Reach of a Retail Colossus by Zook, Matthew; Graham, Mark (2006).

efforts to “revamp the field organization structure of Wal-Mart U.S. [that] gives more authority and responsibility to those closest to the customer.”

4.6.3 Wal-Mart’s Contribution towards Hurricane Katrina Relief Effort

“Wal-Mart has raised the ante for every company in the country; this is going to change the face of corporate giving.”

- Adam Hanft, chief executive of Hanft Unlimited Inc.⁴⁹

Wal-Mart is one of the largest corporate donors for the 2005 hurricane season.⁵⁰ It made more than \$18 million in cash (\$15 million to the Bush-Clinton Katrina Fund, \$1 million to The Salvation Army, \$1 million to the American Red Cross and another \$1 million to the Texas Governor’s Disaster Relief Fund), \$14.5 million in cash assistance to more than 20,000 impacted associates (Wal-Mart employees) through Wal-Mart’s Associate Disaster Relief Fund, and \$3.5 million in merchandise (including water, clothing, shoes and sandals, batteries, flashlight, first aid kits and personal hygiene items).

However, Wal-Mart’s greatest impact in the hurricane relief effort is in utilizing its supply chain expertise and assets to deliver aid that had direct impact to hurricane victims.

Using its retail outlets. Stores have provided products free of charge in hard hit areas, such as Pass Christian and Waveland, Miss., where other assistance could not arrive. Truckloads of water, ice and dry food were sent to the parking lots of stores to distribute to residents in conjunction with the National Guard. Wal-Mart also deployed mobile mini Wal-Mart stores

⁴⁹ Wal-Mart at Forefront of Hurricane Relief, Washington Post, Michael Barbaro and Justin Gillis, September 06, 2005. <http://www.washingtonpost.com/wp-dyn/content/article/2005/09/05/AR2005090501598.html> (last viewed May 20, 2007)

⁵⁰ Wal-Mart Fact Sheet on Katrina Relief, http://www.walmartfacts.com/FactSheets/8302006_Katrina_Relief.pdf (last viewed May 20, 2007)

where either their stores were closed or there was no store in the refugee concentration area, to provide necessities free of charge in all the 3 affected states.

Using its supply chain. Wal-Mart mobilized and dispatched 2,450 Wal-Mart truckloads of supplies to sustain the relief effort and was often the first relief to arrive at staging sites, command centers and shelters. They were delivering the right aid to the right place at the right time. Wal-Mart supported government-directed relief efforts by responding to local government and the American Red Cross' requests in meeting critical needs, see sidebar 1 story below.

Sidebar 1: Sustaining hurricane victims at Houston Astrodome

At Houston Astrodome, Wal-Mart donated \$129,000 worth of merchandise, which they distributed through a donation center they setup there. They also contributed beds for hurricane victims and volunteers.

To the local Red Cross operating there, Wal-Mart donated a computer, fax machine, TV, VCR, children's movies, as well as \$3,000 worth of supplies comprising poster boards, index cards, mops, trash bags, etc. to support their relief operations. Wal-Mart also augmented Red Cross with two members of Wal-Mart's local management team and 45 associate volunteers.

Wal-Mart also donated diapers, formula, undergarments, 6,000 sleeping bags, 400 baby beds and office supplies for doctors to use for hurricane victim triage at the George R. Brown Convention Center, which housed 7,000 refugees that spill over from the Astrodome.

Wal-Mart also acted on its own accord to provide relief and distinguished itself especially in supporting the rural areas. Its action in Waveland, Mississippi is a stellar example of Wal-Mart's commitment to the city throughout the entire disaster relief cycle – see sidebar 2 below.

Sidebar 2: Commitment in Waveland, Mississippi

In Waveland, Mississippi, Wal-Mart set up a 16,000 ft² air-conditioned tent store on its parking lot, on September 23, 2005, about 3 weeks after hurricane Katrina devastated the city. This facility had six registers, a Connection Center (for cell phones), a Kodak digital kiosk, a Tire Lube Express Center for tire repairs and a mobile pharmacy. Wal-Mart was catering to the needs of the people in the aftermath of a disaster, ensuring that people could buy food, basic items, cleaning supplies, refill prescriptions, process film and get cellular telephones connected.

The tent store, known as “Wal-Mart Express,” was reopened on November 17, 2005 as a new concept store for disaster-impacted areas.¹ It was a prototype 57,000 ft² “store within a store” with temporary walls defining the shopping area and having a merchandise mix reflecting the unique nature of the community's situation. It carried items such as mattresses for FEMA trailers, refrigerators and large quantities of cleaning and storage supplies.

In less than a year, Wal-Mart reopened its Supercenter in its original size in Waveland on August 04, 2006. The Supercenter will be the only full-service grocery and general merchandise store located south of Interstate 10 in the county and provide employment for about 300 people, many of whom worked at the store before hurricane Katrina. Wal-Mart demonstrated a continued commitment to their associates and communities they serve by being there in the immediate aftermath, providing ongoing assistance during the recovery phase and engaging in the reconstruction of the city.

Wal-Mart also made other contributions in the immediate aftermath of the disaster such as donating more than 25 vacant company facilities that were used as temporary supply depots, food pantries, shelters, a tent city for utility crews and another for a dialysis clinic. Wal-Mart paid the utility costs on these facilities while in use. It also participated in the federal coordinated drug supply chain response effort, where Wal-Mart pharmacies nationwide filled prescriptions free of charge to hurricane victims with emergency needs and no money, even if they did not had prescriptions.

Wal-Mart also developed ingenious solutions in meeting critical challenges at hand. In collaboration with the American Red Cross, Wal-Mart made provisions for people to post pictures of friends and loved ones online at www.walmart.com and www.samsclub.com free of

charge at any Wal-Mart Photo Centers in a bid to help find and locate missing people. To implement this, Wal-Mart further contributed and delivered 150 Internet-ready terminals to shelters. This service received more than 50,000 postings and more than 2.1 million visits.

Other initiatives include free check cashing in approximately 126 stores in the hurricane-disaster area for an initial two-week period, which included government, payroll and insurance checks and computer-generated checks. Wal-Mart also opened gift registry kiosks for anyone displaced by the hurricane to sign up for needed items.

4.6.4 Wal-Mart's Business Continuity Operation - a Boon to Disaster Relief

"While state and federal officials have come under harsh criticism for their handling of the storm's aftermath, Wal-Mart is being held up as a model for logistical efficiency and nimble disaster planning, which have allowed it to quickly deliver staples such as water, fuel and toilet paper to thousands of evacuees."

- Michael Barbaro and Justin Gillis, Washington Post (September 6, 2005)⁵¹

Another notable feature of Wal-Mart's sterling response during hurricane Katrina is its business continuity team which had its Emergency Operations Centre located at Bentonville. Led by Jason Jackson, the director of Business Continuity, it monitored, planned and directed all the disaster recovery plans for its stores and in meeting store's requests for goods. Table 2 below proved the effectiveness of Wal-Mart's well-oiled team and comprehensive approach to disaster management.

⁵¹ <http://www.washingtonpost.com/wp-dyn/content/article/2005/09/05/AR2005090501598.html> (last viewed May 20, 2007)

Table 2: Records of Wal-Mart EOC Activities during Hurricane Katrina⁵²

Date	Hurricane Katrina	Wal-Mart EOC activities
Aug 24 (Wed)	Katrina was reclassified to a storm from a tropical depression	Jason Jackson, the retailer's director of business continuity, started camping out in Wal-Mart's emergency command center with more than 10 staff monitoring the situation. Planning commenced. Identify store locations that are in potential impact areas and have "storm-readiness" supplies and cleanup materials delivered.
Aug 26 (Fri)	Katrina made landfall in Florida	EOC staffed with 50 Wal-Mart managers and support personnel, ranging from trucking experts to loss-prevention specialists.
Aug 28 (Sun)	A day before Katrina made landfall.	Mr. Jackson ordered Wal-Mart warehouses to deliver a variety of emergency supplies, from generators to dry ice to bottled water, to 8 – 10 designated staging areas so that company stores would be able to reopen quickly if disaster struck.
Aug 29 (Mon)	Katrina made landfall.	Closed 126 stores and 2 distribution centers. More than half lost power and 89 stores reported damaged. The hurricane also knocked out Wal-Mart's computerized inventory system. EOC called stores to establish the situation and what they needed.
Aug 30 (Tue)		Wal-Mart trucks, some escorted by police, were setting out to deliver 40 generators and tons of dry ice to company stores across the Gulf that had lost power.
Sep 9 (Fri)		All affected stores were reopened except for 15.

4.6.5 Preparing for Future Disasters

Wal-Mart continues to prepare for future disasters through a number of initiatives:

Collaboration with state and local governments. Wal-Mart are in talks with state emergency managers, local government agencies, retail federations and other large retailers such as Home Depot and Target, to develop plans and work processes for an integrated response.

⁵² At Wal-Mart, emergency plan has big payoff, Ann Zimmerman and Valerie Bauerlein, The Wall Street Journal, September 12, 2005 <http://www.post-gazette.com/pg/05255/570139.stm> (last viewed May 20, 2007)

Making Connections on the Ground. Wal-Mart's pragmatic approach to disaster response is laudable. In hurricane-prone states, Jackson and his emergency team met with police, fire chiefs and paramedics to make sure each know the local store managers. In those states, if a management Associate needs to cross a police line to complete a critical mission, it helps for law enforcement to recognize that person as a friendly face.⁵³

⁵³ Wal-Mart's Emergency Operations Center Prepares for Hurricane Season, Wal-Mart.
<http://walmartstores.com/GlobalWMStoresWeb/navigate.do?catg=642> (last viewed May 20, 2007)

5 Humanitarian Supply Chain Developments for the Future

This chapter describes developments that are taking place in humanitarian logistics. The primary focus is on information technology and web-based networks that are being created to enhance communication and supply chain integration between donors and relief agencies during disaster relief operations.

5.1 American Logistics Aid Network

This case study was developed with help from Rick Blasgen, President & CEO CSCMP, and Gene Klein, CSCMP ALAN Team founder.

5.1.1 Introduction

Many organizations and corporations were disgruntled and embarrassed by the poor response to Hurricane Katrina. One of the biggest difficulties they faced was contacting and making additional donations to relief agencies after the relief process had already started. Relief agencies did not have adequate manpower or resources and were not able to coordinate and handle the donations. This created an impetus to create a network to help with the disaster relief process and share supply chain and logistics expertise of the commercial sector with the humanitarian sector.

5.1.2 What is ALAN?

ALAN (American Logistics Aid Network) is a project being developed by CSCMP⁵⁴ in concert with numerous organizations including: the Federal Emergency Management Agency (FEMA), the Department of Homeland Security (DHS), the US Chamber of Commerce, the American Red Cross, America's 2nd Harvest and the Business Roundtable. ALAN is a strictly voluntary organization aiming to provide supplemental aid to already established relief agencies during times of national crisis and it is targeted to be in place by June 1, 2007.

ALAN currently has nine associations signed up as contributing members:

- AEFI – American Frozen Food Institute
- CSCMP
- FMI – Food Marketing Institute
- GMA – Grocery Manufacturers Association
- IARW – International Association of Refrigerated Warehouseman
- MHEDA – Material Handling Equipment Dealers of America
- MHIA – The Material Handling Institute of America
- IWLA – International Warehouse and Logistics Association
- WERC – Warehousing Education and Research Council

These nine associations translate into over 8000 corporations, large and small. ALAN is comprised of associations vice corporations mainly due to the fact that corporations tend to be

⁵⁴ The Council of Supply Chain Management Professionals (CSCMP), founded in 1963, is a global not-for-profit business organization that helps supply chain professionals collaborate and share ideas. It provides education, research, and networking opportunities to over 10,000 members and to the entire supply chain profession.

treated harshly in the media and associations are usually treated more fairly. It is also easier to capture all significant corporations through the associations.

With the captive participation of the bulk industry players, comprised primarily of logistics and supply chain experts, ALAN will be able to provide the focused, unified voice necessary to forge the body of knowledge for an industry-wide collaboration in support of a coordinated and integrated response to a national disaster. By using the supply chain and logistics expertise of its members, ALAN also hopes to eliminate bottlenecks and bureaucracy in the humanitarian supply chain

The focus of ALAN is to provide a coordinated industry response for national level disasters. ALAN is not aiming at being the first responders, as these are normally put in place by FEMA and State authorities. Instead, ALAN is aiming to provide a replenishment function, and come into action after the primary resources and contracts of relief agencies have been exhausted. ALAN does not want to replace any relationships that are currently in place for relief groups but rather supplement and sustain the efforts.

5.1.3 How is ALAN Operationalized?

ALAN has tendered the development of an IT system that helps match a need with a donor. This IT system, or matching board, will collaborate primarily with members of NVOAD (National Voluntary Organizations Active in Disaster), an organization that coordinates efforts of over 59 charities. These relief agencies will define the aid demand. Progress is currently being made to create a common list of definitions of aid that would facilitate the quick matching of items in the market with the need.

The ALAN board process will kick in when a federal disaster is declared by the President of the United States. A warning email will be sent to all pre-approved participating corporations

to review their contribution lists, capabilities and capacities that they can potentially offer. On the demand side, NVOAD charities will commence posting the demands they need on the ALAN matching board. ALAN board participation will only be authorized to relief agencies that have been certified in advance. ALAN members (donors) can select a need from the board which they want to contribute to, and that donation notification is then sent to the relief agency that posted the need. The relief agency can then review and accept that offer. The ALAN board is updated appropriately when a need is met and the demand is struck off the board in order to prevent 'over-donation' and saturation of the disaster area with items that are not needed. The donor and the accepting relief agency work out the details of the item delivery on their own. Again, the ALAN board is primarily a matching board and does not coordinate any of the transportation or delivery details. Those details are entrusted to the ALAN members because they are all part of the logistics community with vast knowledge and experience in getting products to the right people, in the right place, at the right time.

The ALAN IT system comprises three components:

Material. This component is essentially the aid that is needed. Material needs to be well defined so that donors can readily match the items they have with what is needed. The standardization of nomenclature and the identification of a list of standard items donated in disaster relief operations are near completion.

People. This component defines the logisticians with the necessary skills and qualifications that are required to operate certain equipment. Skilled logisticians are in high demand in disaster sites to assist in rescue and logistics operations. FEMA and relief organizations require qualified personnel to ensure that logistics operations are carried out safely and avoid unwarranted insurance issues.

Transportation. This component refers to the carriers, whether donating or otherwise, that can carry the identified aid or material that needs to be transported to the disaster site. This module aims to match the good with the right carrier in terms of volume, availability and any special handling or storage requirements.

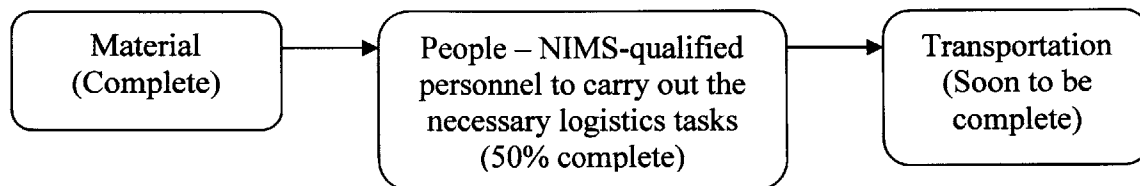


Figure 15: Material Flow Diagram for ALAN IT System Development

One of the biggest problems faced when developing ALAN has been education.

Corporations need to be educated on the disaster relief process in order to understand how they fit into it and how they can improve it. Many corporations are keen to contribute but FEMA and relief organizations are concerned with sustaining the effort and getting the right aid at the right time.

The ALAN developers realized an organized relief effort is extremely important, especially when responding to a large national disaster such as the scale experienced after Hurricane Katrina. The relief plans need to cover a large geographical area and it is important not to replicate systems already set in place.

5.2 Aidmatrix

This case study is developed based on interviews with Keith Thode, Chief Operations Officer, Aidmatrix.

5.2.1 Introduction

The Aidmatrix Foundation, Inc is a non-profit organization that is dedicated to helping charitable and relief organizations develop supply-chain management solutions to increase efficiency and reduce waste in the delivery of humanitarian aid. Its slogan “the right aid for the right people at the right time” defines its mission in bringing the industry’s knowledge and expertise into the non-profit to enhance better performance, accountability and reduce wastage. Aidmatrix achieved 501(c) (3) non-profit in February of 2004 and is governed by a voluntary board of directors including captains of industry. Founded as a program of the i2 Foundation half a decade ago, it now partners with leading IT corporations including i2 Technologies, Accenture, Sun Microsystems, Alcatel, Dell, EDS and others to engage employees and the public in its innovative mission.⁵⁵

5.2.2 IT Development Sophistication in Humanitarian Supply Chains

It is opined that the IT development and implementation in humanitarian supply chains of relief organizations lags substantially behind the commercial sector. This is attributed to budget constraints and also the tendency for relief organizations to spend money on tangibles such as food or aid material, rather than spending money on developing software to improve operating

⁵⁵ Aidmatrix Homepage, <http://www.aidmatrix.org/overview.html>

processes where enhancements are difficult to quantify. Specifically, the areas of donations management and supply chain integration planning have substantial room for enhancements.

Donations Management. Some notable statistics:⁵⁶

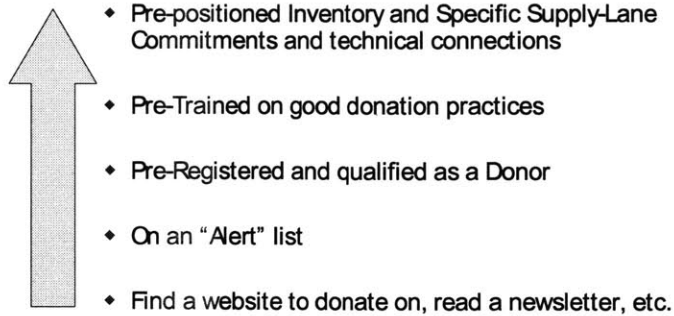
- UN Agencies typically reject over 90% of in-kind aid offers, this increases in times of a disaster. Similar statistics exist for some other major relief organizations.
- In response to Katrina and Rita Hurricanes, less than 1% of all in-kind offers submitted to FEMA via their formal system were accepted.
- As of 2003, there was still \$75 million in unused donations in a single warehouse in New Jersey, from 9/11 donations.

The statistics above illustrate that improper donations management has the potential to overload and clog supply lines with unneeded items. It wastes transport capacity which can be better used carrying the right aid needed. Roads, highways and distribution facilities can be tied up with unproductive work. There is also the subsequent handling and disposal costs that are needed to manage this unsolicited aid. Nonetheless, in-kind donations can be an invaluable part of relief efforts provided they are managed effectively.

Supply Chain Management. Many of the same principles from the “Supplier Integration” disciplines of the for-profit world apply in the non-profit as well. The more integrated private sector organizations can be with the NGO world, the more effective the relief agents can be in times of disaster. Figure 16 describes the levels of integration that can be achieved.

⁵⁶ Aidmatrix ALAN Proposal Presentation, Aug 2006

Donor Integration/Pre-Registration Continuum



aidmatrix
humanity. technology. partnership.

Figure 16: Levels of Integration

In humanitarian supply chains, a supply-driven donations management system is usually the norm for daily ongoing relief efforts; however, in the event of a disaster, aid requirements become demand-driven. Aidmatrix's aim is to develop a system that is flexible and able to meet both supply and demand-driven scenarios. More important, the system is to integrate with donors' enterprise systems to make donations seamless and integral to their business process.

5.2.3 Aidmatrix Systems and Solutions⁵⁷

Aidmatrix's solutions grew from a supply chain software that originated and was donated by i2 Technologies. To date, Aidmatrix's product array includes a volunteer clearinghouse, product donations exchanges & a clearinghouse, and corporate employee and customer Virtual Aid Drives™. Aidmatrix Exchanges help mobilize resources – cash and product donations through virtual tools. Some key users include America's Second Harvest (A2H), the FEMA/Gulf Region States and The National Association of Free Clinics.

⁵⁷ GLOBAL RELIEF NETWORK - 2005 COMPUTERWORLD HONORS CASE STUDY, http://www.cwheroes.org/archives/case_studies/aidmatrix.pdf

DonorExpress is an adapted i2 supply chain software for A2H that provides the relief organization an integrated system into its key suppliers' Enterprise Application (ERP or other inventory control-based) systems, enabling one-click donation capabilities in the donor's existing systems and materials management processes, donation matching, distribution and delivery scheduling. This makes relief donating very much a part of the business daily operations, making the process seamless and easy. Over and above the ongoing donations to A2H for the feeding of 23 million impoverished U.S. citizens, DonorExpress supply-chain technology was used to process more than 5 million pounds of food moved through the logistics network to A2H's 17 food banks in the state of Florida during the hurricane disaster relief operations for Hurricanes Charley, Frances, Ivan and Jeanne in 2004.

AgencyExpress is a web-based software application designed with America's Second Harvest to enhance the efficiency of relief agencies' ability to order items from their local food bank. Efforts are being made to empower operators in the field by developing solutions that provides wireless integration components, so that "first-in" disaster evaluation teams can check the donor database with handheld devices, speeding the delivery of aid to the disaster scene.

These are customized instances of Aidmatrix' broader core relief platform termed the **Global Relief Network**, the first Internet-based IT solution that matches up surplus food, clothing, medical supplies and other relief materials from international donors / suppliers to charitable / relief organizations.

5.2.4 Hurricane Katrina

“We were among the first on the ground in LA, MI, AL, and Houston. Our people were there to ensure that systems to empower America’s Second Harvest and its local affiliate Food Banks as well as Adventist Community Services (ACS) could mobilize, warehouse, track, and distribute food needed to care for those affected by the storm. Our technology crisis response teams worked side by side with A2H staff and volunteers”⁵⁸

- Governor Scott McCallum, Aidmatrix President & CEO

Aidmatrix’s system was in use during Hurricane for A2H and ACS to support their supply chain operations. Aidmatrix’s system orchestrated more than 30 million pounds of food aid, for distribution by Food Banks in 34 Gulf Coast Communities affected by Katrina and Rita. It provided inventory visibility in A2H and ACS’s supply chains that is similar to what is found in today’s more sophisticated supply chains of private enterprises. This visibility and the potential it brings led to the designation of Aidmatrix by the Department of Homeland Defense as the IT partner to establish a Federal system that will link FEMA with U.S. States, charities and donors in a single network.

“If we use this system in many or all of the warehouses that are serving the victims. This means using it for more than the ACS managed, multi-agency warehouses. It seems to me that it would help the entire operation to be able to have an overview of what supplies were available and where. Then both the state and FEMA would be better able to place vital supplies where they are need and where they are in short supply.”⁵⁹

Joe Watts, Adventist Community Services National Disaster Director and
Texas VOAD Vice President

⁵⁸ Aidmatrix Foundation Emerges as Leading Solution for Disaster Aid during Twin Sisters Katrina & Rita, Aidmatrix Press Release, <http://www.aidmatrix.org/rita-pressrelease-09012005.html>

⁵⁹ What Others Are Saying, Aidmatrix website, <http://www.aidmatrix.org/What-others-are-saying.html?#JanetE>

5.2.5 Participation in the American Logistics Aid Network

Aidmatrix also has been an early supporter and donor of technical expertise in the American Logistics Aid Network (ALAN), a new network spearheaded by CSCMP, to enable the industry to better support relief agencies in meeting aid requirements and donations matching, transportation and warehousing, for the entire continuum from preparation, immediate response to sustained recovery operations for major disasters.

A specific area of development that Aidmatrix seeks to resolve in humanitarian supply chain is transportation. Transportation was singled out for a number of reasons:

- Scheduling and Capacity Constraints. Transportation is recognized to be the chokepoint in the humanitarian supply chain. It is already so for ongoing daily relief due to the windows available for donated transportation or preferential rate backhaul; in the event of major disasters, the transport capacity within the industry may not be sufficient to meet the surge in transport demand.
- Inefficiency. In terms of volume, a third of what is moved in a peak day of Hurricane Katrina's relief operations is being moved on a daily basis for ongoing relief efforts. It is opined that a large part of the transportation issues faced in Hurricane Katrina relief operation was due to inefficiency rather than a capacity issue alone. Currently in the market, there is an untapped 40% open transportation capacity.⁶⁰ When properly managed, this untapped capacity can potentially fill much of the transport needs for daily relief and during a disaster.
- Lack of Financial Incentive. There is currently no financial incentive for transport companies to donate surplus transport capacity. Unlike product-based

⁶⁰ This 40% is a combination of backhaul capacity, LTL capacity and other asset repositioning capacity.

companies where they received tax write-offs for twice the amount of the cost of the products donated, no such rules exist for services, which includes transportation.

Some ideas that are being studied into for transportation improvements include:

- Co-pay backhaul. It is a common practice for charity / relief organizations to pay the cost of diversion from a truck's backhaul trip to get their aid picked up and delivered. This option is being looked into to be established as a standard system linking non-profit with carriers on an ongoing basis.
- Legislative Initiative. Lobbying for legislative changes to expand the Good Samaritan Act of 1986 to include transportation services under tax relief regulations would unlock capacity for non-profit usage. If a comparable write-off for products is applied to transportation, even at a reduced rate, would likely yield dramatic results.

5.2.6 Vision of a National Relief Network and Database

A central national relief network for the purpose of having transparency and full visibility to allow proper decision-making, allocation and distribution planning is essential during a disaster. This is already being mooted in FEMA under their National Response Plan and Aidmatrix is already designated as the IT solutions partner.

The idea is to expand today's established private donations network within each charity and relief organization into a public donations network. This would be done on a voluntary basis and participating charity / relief organizations / private sector entity will have the prerogative to post what they want to make available for sharing. This would encourage a more active and open sharing of available resources for the overall benefit of all partners in the relief effort. This national network will adopt a "Hub and Spoke" network and would be inclusive to include smaller charities and donors as well. It will adopt a service-oriented architecture and open

standards so as to enable inexpensive and easy linkage to other existing donations management used by charity / relief organizations and business enterprise systems.

5.3 International Federation of the Red Cross and Red Crescent Societies

The following case study was developed with the help of Martin Bush, Unit Manager, Systems and Processes, Logistics and Resource Mobilization Department, International Federation of Red Cross and Red Crescent Societies.

5.3.1 Introduction⁶¹

The International Federation of Red Cross and Red Crescent Societies (IFRC) is the world's largest humanitarian organization, comprising 185 members of Red Cross and Red Crescent National Societies (NS), a Secretariat in Geneva and more than 60 delegations strategically located to support activities around the world. The Red Crescent is used in place of the Red Cross in many Islamic countries.

The unique network of NS - which cover almost every country in the world - is the Federation's principal strength. Cooperation between National Societies gives the Federation greater potential to develop capacities and assist those most in need. At a local level, the network enables the Federation to reach individual communities.

The role of the Secretariat in Geneva is to coordinate and mobilize relief assistance for international emergencies, promote cooperation between National Societies and represent these National Societies in the international field. The role of the field delegations is to assist and advise National Societies with relief operations and development programs, and encourage regional cooperation.

⁶¹ Source: http://www.ifrc.org/who/index.asp?navid=03_01

A key enabler supporting the mobilization of relief assistance for emergencies is the IFRC's Humanitarian Logistics System (HLS). HLS is an IT system, developed and deployed 4 years ago, that has been in operation since September 2003 for all major international disasters, the first being the Iran Bam earthquake. To date, the HLS has managed over 39 worldwide emergency appeals.

5.3.2 Humanitarian Logistics Software

Humanitarian Logistics Software (HLS) is used for consolidating a list of needs and sharing these with National Societies worldwide when a major disaster has occurred and its scale exceeds the capabilities of the national society where the disaster occurred. HLS is used to support the sourcing of the goods and services needed using a full procurement and in-kind donations module. See Exhibit 1 for a sample of the HLS' mobilization table. It subsequently tracks supplies / donations from its source to the port of entry of the country in need. The HLS is an internal IT system that links IFRC HQ's Logistics Dept in Geneva to its 3 Regional Logistics Units (RLUs) located in Kuala Lumpur, Malaysia; Panama City, Panama; and Dubai, United Arab Emirates.

When a major disaster hits a country, the country's NS may request assistance from IFRC in assessing and responding to the disaster. IFRC has the ability to provide resources by mobilizing and coordinating the network of other NS's, using its pre-positioned stockpiles located strategically worldwide and Disaster Relief Emergency Fund (DREF) for financial support; and also deploy specialist staff support such as the Field Assessment Coordination Team (FACT) and Emergency Response Units (ERU) into the disaster area to support the NS. This usually results in a list of goods and service requirements (such as medical equipment, body bags, food, water, tents/shelters) needed for the relief operation that is send from the affected NS

to its RLU. The responsible RLU enters these needs in the HLS and then broadcasts the requirements to all NS world-wide. The RLU is then responsible to assist in coordination and tracking with IFRC staff deployed on-site in the affected country as well as the host National Society.

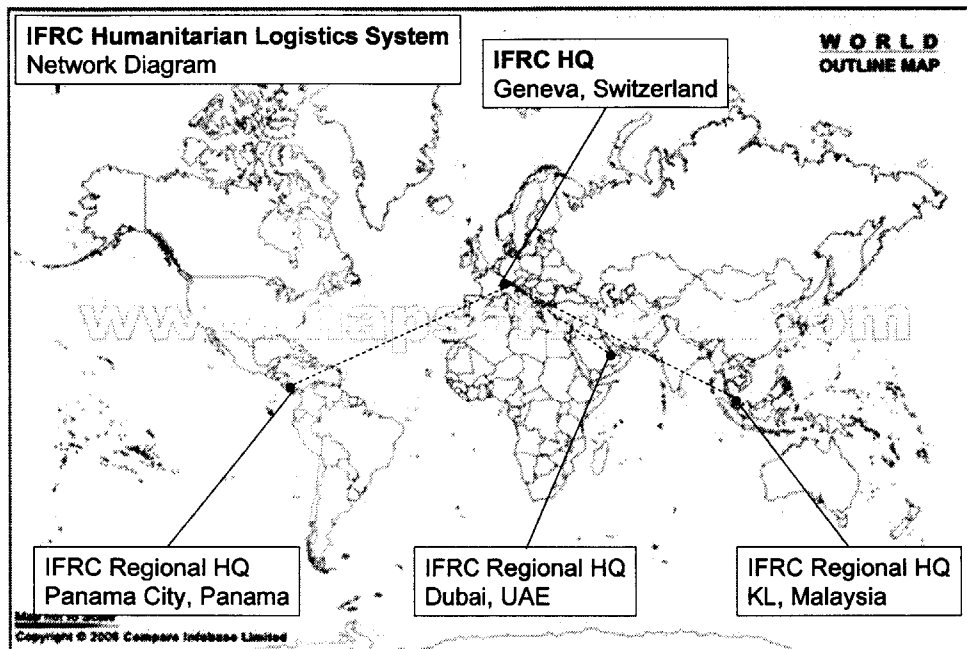


Figure 17: IFRC HLS Network Diagram

When other NS respond with donations, the details of what item, quantity and shipment details are sent to IFRC, who then informs the receiving NS and the same data is entered into the HLS by the RLU. Goods not sourced through donation are purchased using the Purchasing Module in HLS. The resulting shipments are tracked and a pipeline of inbound goods is provided to the receiving location(s). When the aid arrives at the receiving location of the disaster hit country, a pre-formatted form is used to acknowledge the receipt of the aid, stating any variance or issues. This information is sent (either by mail or email) to the RLU who in turn updates the HLS and clears the pipeline of that shipment. The information flow diagrams can be found in Exhibit 2 and IFRC's logistics activities and process diagram is in Exhibit 3.

Some notable features of HLS include:

- The HLS is strictly an internal system linking only 4 logistics departments (Geneva and the 3 RLUs). As such, data integrity is high as the users are trained and experienced with the system; there is no possibility of intrusion from any external parties that may enter wrong data and corrupt the system. HLS is also a manual system requiring all data to be entered by the Logs Dept staff of information received from the NS sent via email / faxes.
- There is no “last mile” tracking in HLS, the acknowledgement of receipt of aid is at the port of entry of the receiving country. Subsequent tracking of the flow of aid within the country from the warehouse to the final distribution point is carried out by the respective National Societies using a combination of automated or manual systems they have in-place.
- HLS has an online catalog system with its own identification numbering system. Whilst UN has expressed interest to have a standardized international catalog system, the development has been slow.
- The HLS does not have prioritization feature to indicate which urgency of the various aid items as the FACT faced challenges in setting priorities and delivery dates.
- HLS provides an effective information exchange service (through its Mobilization Table) allowing NS in broadcasting the aid they need, for RLU to assist in procurement and for other NS to respond from their stockpiles. Field operators find the shipment updates (through the Pipeline Report) most useful as they can now anticipate and plan for the relief activities when the aid arrives.
- HLS also provides a comprehensive source of the procurement and donation activities which is used for financial reporting and accountability.

- Relief Aid requirements (gathered within the HLS) are also broadcast to the public through other means (IFRC website) allowing potential donors to match them in cash or kind, donating either directly to the NS or via IFRC.
- HLS with other tracking systems established by the receiving NS, is able to provide donors with status updates of their donations down to the 'last mile'.

5.3.3 Implementation Challenges

The implementation of HLS was not without its challenges. There was substantial resistance from people as the system demanded standardization of work processes and many people had to adapt to this new way of working. It was also not the most user friendly system and it was manual. However, overtime, the benefits of the system began to show, the system was enhanced and people today feel they could not do their jobs as effectively without the system.

With regards to the question on the use of RFID to support tracking, the response was that RFID is good to have but it is too expensive and difficult to acquire, deploy and maintain. Also, it would entail the need for substantial training and it may not always be immediately deployable in disaster areas. Also, RFID is not a prevalent standard; many of the aid items sent do not even have identification coding.

5.3.4 Logistics Systems Enhancements Planned

IFRC has two immediate plans to enhance its logistics systems:

HLS Evolution. A primary objective is to overhaul the user interface, to make it more user friendly, make it more simple to use by removing functions of data capture that have not been used and to use a more up to date software platform. Another objective is to develop a

demand planning feature to support the FACT in making assessments, set priorities and timelines.

Field Warehouse Management System (WMS). The WMS, with first pilot trial scheduled in Jun 07, is meant to support ground logistics operations in inventory management using barcode technology. It will automate some of the existing acknowledgement processes at the port of entry and can potentially support more refined “last mile” tracking of aid distribution.

5.3.5 Key Challenges of a Dynamic Web-based Matching Board

Some of the challenges of a web-based matching board such as the American Logistics Aid Network (ALAN) include answering who will coordinate and ensure that the aid is delivered. If things do not get delivered, who is accountable? There are many downstream problems if promised aid do not arrive on time, it will affect the confidence in the system. In a multiple donor and multiple recipient scenario, who will make decisions on allocation – who get what items from which donor? There are also issues of prioritization and timing, how to manage different grades of material donated, and how to arbitrate which relief organization gets what.

EXHIBIT 1: Sample of IFRC HLS's Mobilization Table

Mobilization Table Report

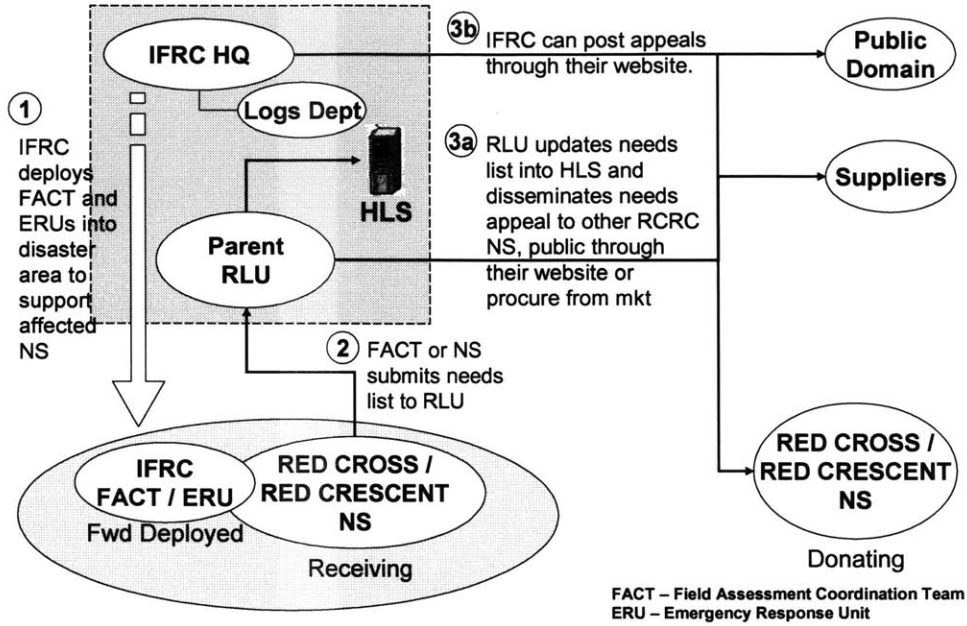
Appeal No : M05XX999

OU Name : IFRC Secretariat
 Report Date : 15/08/06 14:49
 Appeal Title : South Asia: XXXX Appeal

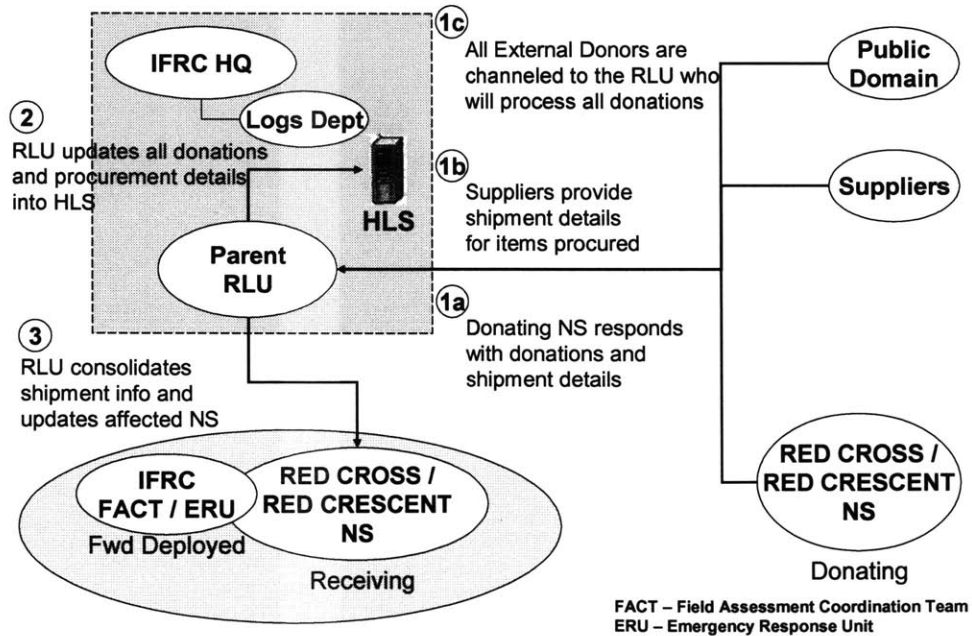
Commodity	UOM	Total Quantity Needed	Unit Price (CHF)	Project 1	Proj 2	Donor	CTN	PO/IKD No	IKD Status	Solicitation Status	Remarks	Estimated Total Cost (CHF)	Estimated Outstanding Cost (CHF)
				Country A	Country A								
Inside Appeal Items													
ABAGZFCH0001	pce	4200	25	4200								105000	105000
Body Bags				2000		Borrowed from IFRC	05-0000611	IKDN-CHGES-05-0128	A	Solicited	1. Tents, blankets from Afghanistan Delegation; 2. Body Bags from Sri Lanka Delegation.	50000	0
				2200		Qatar RC	05-0000858	IKDN-CHGES-05-0141	V	Solicited		55000	0
Outstanding	2000			2000						Coverage		52.38%	
DASDCHLA0100T	pce	500000	0.0151	500000								7550	7550
CHLORE, 100mg (NaDCC 167mg), for 20L water purif., tab.				644000		British RC	05-0000816	IKDN-CHGES-05-0132	V	Solicited		9724.4	-2174.4
Outstanding	144000			144000						Coverage		128.8%	
DINFPLSU1B5	pce	50	6.0788	50								303.94	303.94
PLASMA SUBSTITUTE, Gelatin, 500 ml, plastic btl.				50			05-0000934	PON-CHGES-05-0233	A	Solicited		303.94	0
Outstanding	50			0						Coverage		100%	
DINJBUPI5A4	pce	200	2.5456	200								509.12	509.12
BUPIVACAINE, heavy, 0.5% (5mg/ml), 4ml amp. for spinal a.				200			05-0000935	PON-CHGES-05-0233	A	Solicited		509.12	0
Outstanding	200			0						Coverage		100%	

EXIHIBT 2: IFRC Aid Request and Tracking Information Flow Diagrams

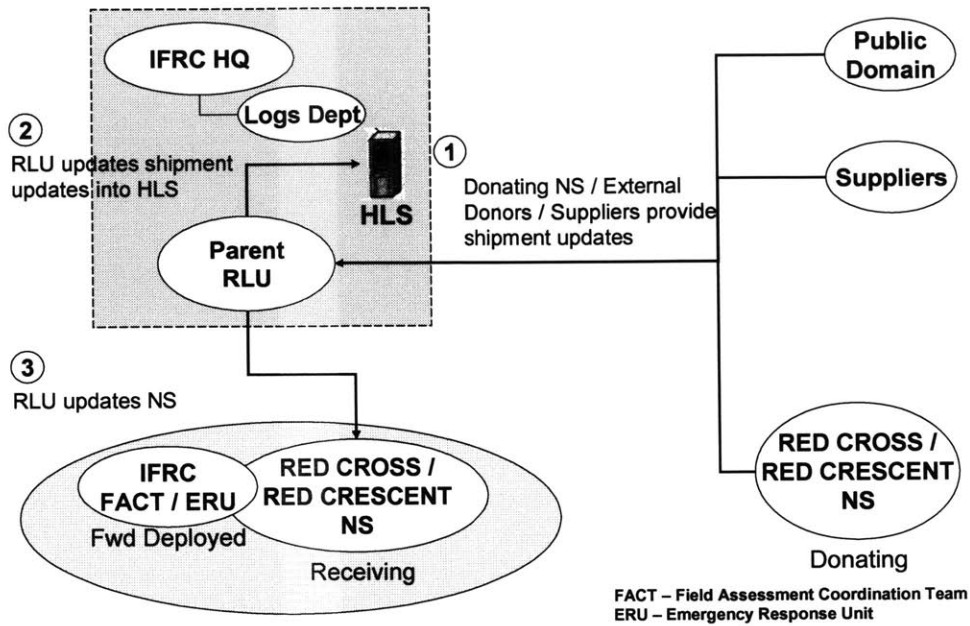
Initiation of Relief Reqts Information Flow Diagram



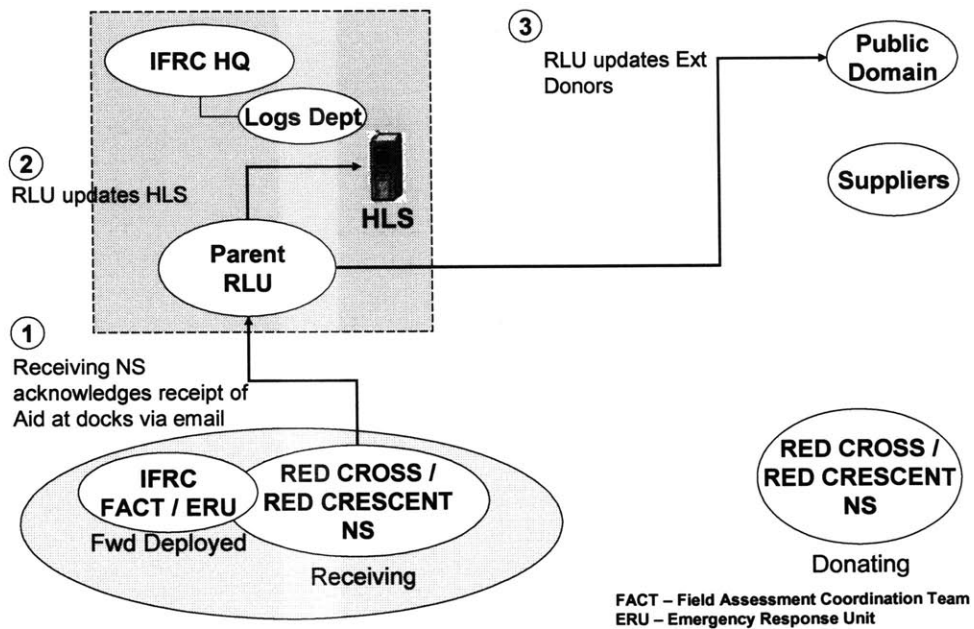
Response of Relief Reqs Information Flow Diagram



Tracking of Aid Donations Information Flow Diagram



Receipt of Aid Donations Information Flow Diagram



6 Summary of Findings & Proposed Areas for Improvements

The case studies provided insights on how various private corporations interacted with government agencies, NGOs, relief agencies, faith-based organizations and local charities. Despite the challenges they face in making contributions to the relief effort, some of which were victims themselves like Chef John Folse & Company, the Wal-Mart stores, CVS pharmacies and SYSCO's distribution centers, private corporations were putting their supply chain expertise into good effect and making improvisations along the way. The results have had significant impact to the relief effort; some corporations have even been acclaimed by the press to have performed better than the federal government. In spite of the sterling contribution they have put forth, many of the corporations we interviewed or studied have taken further steps to prepare themselves better to respond to the next major disaster should it happen again. This is a testament that U.S. corporations are prepared to take on a greater role in disaster relief. Table 3 below summarizes the positive actions and challenges they faced during the hurricane Katrina relief effort, and improvements that they have taken since the disaster or plan to initiate.

Table 3: Case Study Findings Summary

	Case Study	Relief Organizations		Industry						Supporting Organizations	
		ARC	A2H	Dunkin' Brands	Chef John Folse	McDonald's	SYSCO	CVS	Wal-Mart	ALAN	Aidmatrix
What helped them/Assets	Local Presence or Contacts	Yes	Yes - Local Charities / Faith-based Org	Yes	Yes	Yes	Yes	Yes	Yes		
	Extensive Distribution Network	Yes	Yes - Foodbank Network	Not in Southern States		Yes	Yes	Yes	Yes		
	Pre-Staging / Inventory	Yes	Yes					Yes	Yes		
	Business Continuity						Yes - supported by sister companies	Yes	Yes		
	Innovative Solution					Yes - Mobile Trucks	Yes - Mobile Kitchens	Yes - Mobile Pharmacy	Yes - Mini Wal-Mart & Express	Agree	Agree
	Collaboration within Industry & with Partners	Yes but not enough	Yes	Yes - Chef John Folse	Yes - Suppliers		Yes - Chef John Folse	Yes	Yes - Medical	Agree	Agree
	Local Store Owners Empowered to make Donations	NA	Yes	NA	NA	Yes	Yes	Yes - Corporate Systemized	Yes		
Problems they encountered	Lack of Demand Visibility	Yes	Yes	Yes	Yes			Yes	Damaged by hurricane	Agree	Agree
	Lack of Supply Chain Visibility	Yes	Yes	Yes	Yes		No	No	No	Agree	Agree
	Poor Communications	Yes	Yes	Yes	Yes		Yes	Yes			
	Poor Coordination / Bureaucracy	Yes	Yes	Yes	Yes				No - Contributed Direct	Agree	
	Lack of Transportation		Yes	No	Yes	No	Yes - Own fleet sunk	No	No	Agree	Agree
	Lack of Storage	Yes	Yes	Yes	Yes		Yes - nature of business	No	No		
	Outdated IT Systems	Yes	Yes	NA	NA	NA	NA	NA	NA	Agree	Agree
Handling Donations	Yes	Yes	Yes	Yes	No		No	No	Agree	Agree	
What needs improvement	Pre-Agreements & Partnerships	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Agree	Agree
	IT Systems	Yes	Yes							Agree	Agree
	Education		Yes							Agree	Agree
	Sustaining Donations		Yes		Yes					Agree	Agree
	Donations Management	Yes	Yes	Yes - Relief Org	Yes - Relief Org			Yes - Relief Org		Agree	Agree
	Transportation	Yes	Yes				Yes - Own fleet sunk	No	No	Agree	Agree
	Pre-Staging / Additional Storage	Yes	Yes		Yes						

ARC – American Red Cross, A2H – America’s Second Harvest, ALAN – American Logistics Aid Network

Consolidating the inputs from our case studies and correlating with the developments in the humanitarian disaster domain both domestically and internationally, we identified nine areas for improvements, of which six are industry supply chain enhancements and three are initiatives that the government needs to lead.

6.1 Information Technology

Information Technology (IT) has been a key element in transforming traditional logistics business into today's highly synchronized and adaptive supply chain. However, IT development and implementation in humanitarian supply chains of relief organizations lags substantially behind the commercial sector. This is attributed to budget constraints and also to the tendency for relief organizations to spend money on tangibles such as food or aid material, rather than spending money on developing software to improve operating processes where enhancements are difficult to quantify. Specifically, the areas of Donations Management, Supply Chain Integration Planning and Asset Visibility are under-developed and the absence thereof have been cited by many as the reasons for the failure of the supply chain in delivering aid during the Hurricane Katrina relief efforts.

Donations Management - "Aid Exchange". In all of the case studies we developed, not knowing the aid demand – what, where and when it was needed – was the biggest frustration for all donor companies. The idea of an "Aid Exchange" springs from the concept of B2B markets which supports the matching of demand and supply on the internet. Extending this into the realm of humanitarian support, it is the matching of the demand to the supply of aid and services. One of the American Logistics Aid Network's key initiatives is in setting up exactly such a system, termed as a "matching board". This "Aid Exchange" would complement the partnership model by enabling NGOs, faith-based organizations, charities and local communities to post aid requirements that are not covered by prearranged agreements or established donor partnerships, for the collective industry to respond.

Asset Visibility. Another frustration is not knowing where all of the aid is, what is coming into the pipeline, or when and what is going to be released. This has caused much frustration in the coordination of aid distribution by various agencies. For example, in some instances, America's Second Harvest (A2H) waited for FEMA to release much needed water that was 'rumored' to be available but eventually never materialized; on other occasions, A2H delivered food aid only to find FEMA agencies already distributing that aid at the same locations. Such uncoordinated efforts are wasteful, create upheavals in the supply chains, and victims suffer as a result. Accountability was another issue, many donors did not know when or if their donated goods ever reached the hurricane victims. Establishing asset visibility, similar to what Wal-Mart or the DOD has done in their supply chains, would solve these poor coordination issues. It would be remiss to suggest that there is totally no visibility of assets and all relief work is done hastily on pen and paper. Our case studies revealed that two organizations, Adventist Community Services and A2H, benefited from Aidmatrix's deployed solutions that gave them inventory visibility in their network of warehouses. The success of the asset visibility was significant for the two organizations. Though the benefits were limited to the hurricane victims they served, it demonstrated the potential it has when deployed on a larger scale.

"Supplier Integration". To support better humanitarian supply chain planning and tighter integration, Aidmatrix advocates the adoption of the commercial idea of "supplier integration" – i.e. enhancing the information flow between a company and its supplier through the selective integration of their business IT systems. In the philanthropy context, it is between the relief agency and its donors. The idea is to make the "process

of giving” into a “business of giving”, making it a part of a company’s daily ongoing operations and making the flow of information and aid seamless. The primary motivation is twofold: (1) commitment and (2) process normalization.

- Commitment. Strengthens the partnership between donors and the relief agency or charity of choice. It is a mutual recognition that preferential considerations will be accorded when donations are being made or accepted.
- Process Normalization. Makes ‘giving’ a part of the business culture in a donor company so that it is a recognized process and routine. In the event of a major disaster, the same process can be used to channel donations from the donor to the relief agency or charity seamlessly.

IT will be a key enabler in enhancing the industry’s ability to respond. There are, however, a number of considerations when developing and deploying the systems:

- Abilities of the end user who will use the system.
- Programs must be simple, no frills, and user friendly.
- Availability of back-up systems, portable systems, and alternate power sources.
- Cost, maintainability and sustainability.

Ultimately, the vision for the future is a nation-wide humanitarian IT system in which government, relief agencies, private associations and companies can link their

emergency relief logistics systems together on the internet to provide comprehensive supply chain visibility.⁶²

6.2 Transportation

Transportation was a huge bottleneck in the relief operations. As is, the trucking industry is experiencing an industry-wide shortage of drivers for normal daily trucking operations, many corporations' supply chains have also been streamlined to be cost efficient and there is very little slack or spare capacity left within it. Consequently, any spare capacity was quickly exhausted for the disaster relief. Most of the companies we interviewed found it extremely difficult to find transportation to move donations for the relief operations. As A2H noted, while a substantial amount of transportation capacity was donated in the beginning of the Hurricane Katrina relief operations, these donations stopped when relief funding started to run out and companies needed their trucks back for normal operations.

Aidmatrix also views transportation as a chokepoint in the humanitarian supply chain and feels that many transportation issues are due to inefficiencies in management rather than a lack of capacity. Lack of financial incentives for donated transportation capacity was also noted as a large part of the problem.

Some of the transportation initiatives that should be pursued include:

⁶² Vision for a "New FEMA, speech by Administrator of FEMA, FNF-06-019, National Press Club, Washington, DC, November 30, 2006. <http://www.fema.gov/news/newsrelease.fema?id=31850> (last viewed on May 02, 2007)

- Legislation & Tax Breaks for donated transportation services. Write-offs or reduced rates for donated transportation could help unlock capacity for non-profit usage and would likely yield dramatic results.
- Co-pay backhauls between relief agencies and carriers. In the absence of tax breaks, this scheme helps to provide partial cost sharing to encourage trucking companies to undertake runs for relief and charity organizations.

6.3 Storage and Warehouse Space

A lack of adequate storage facilities to sort and stock donations was a major problem for relief agencies. There were many occasions when truckloads of unscheduled or unwanted goods had no where to go and caused bottlenecks at food banks by congesting roads, docks and loading areas. An acute problem was the lack of refrigerated storage for food donations. Many warehouses lost electricity after the hurricane and did not have back-up power for refrigeration. Refrigerated trucks were very low in supply as well. For example, despite repeated requests to its supplier for a few refrigerated trucks to act as temporary cold storage, Chef John Folse & Company did not receive one. The shortage of warehouse capacity was eventually overcome by either leasing additional warehouses or re-opening closed facilities by various different organizations. There is a need for a more streamlined process perhaps best led by various categories of industry leaders to organize and operate these additional facilities.

6.4 Pre-staging

Pre-staging is a widely practiced concept in the government's emergency services and especially the military. Prior to Hurricane Katrina's landfall, the State government and FEMA pre-staged essential commodities in various key areas. The table below summarizes the pre-staged quantities of aid and deployment of shelters as of May 28, 2005.

Table 4: State and Federal Pre-Staging and Preparation for Hurricane Katrina.

	Shelters Avail		Food (MREs)	Water (litres)	Ice (Pounds)
	Nos	Capacity			
Federal / State / ARC	114	28,000	1,860,000	3,700,000	4,600,000
Texas	31	7,275	n.a.	n.a.	n.a.
All other regions	n.a.	n.a.	2,100,000	n.a.	13,000,000
Total	145	35,275	3,960,000	3,700,000	17,600,000

Source: The Federal Response to Hurricane Katrina: Lessons Learned, February 2006.

The map below provides a geographical representation of FEMA's pre-staged locations of aid as of May 29, 2005.

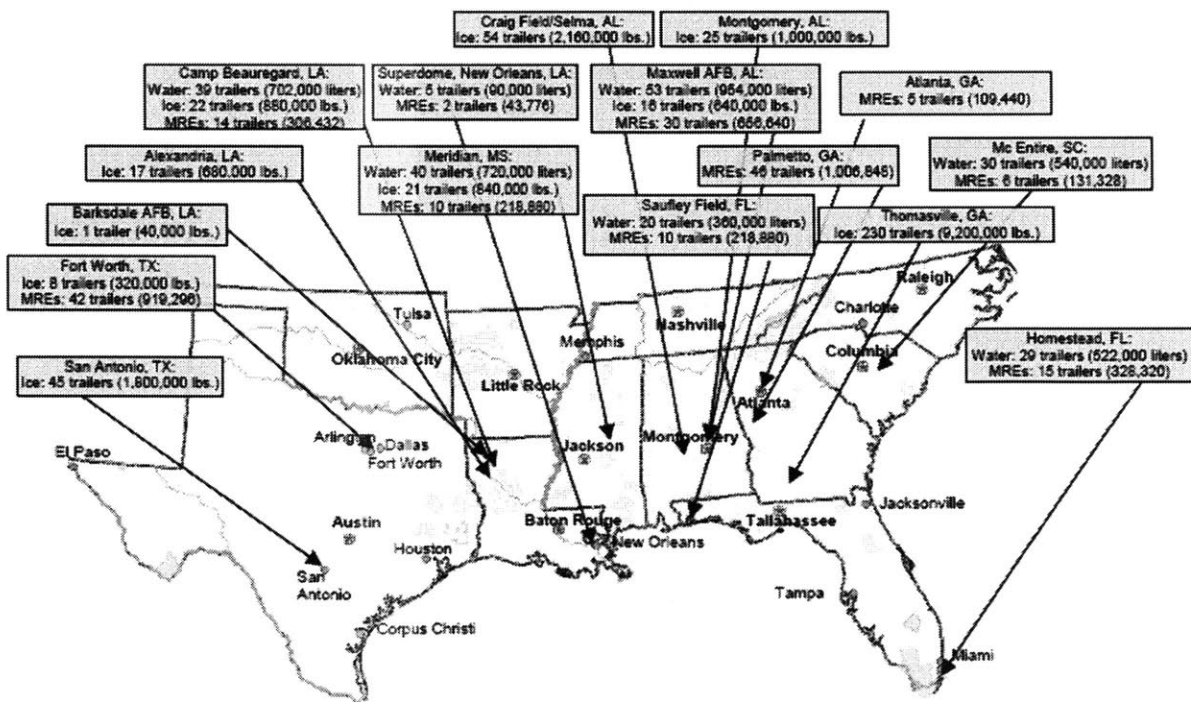


Figure 18: Federal pre-staged commodities prior to Hurricane Katrina landfall⁶³

While there was a pre-staging plan, the quantities were short compared to the scale of need. Based on Louisiana's estimates of 96,000 people⁶⁴ remaining in the affected areas, the MRE⁶⁵ would provide about 40 days of sustenance, water was enough for only four days⁶⁶, and shelters could only accommodate about a third of the population remaining.

The industry and relief organizations also practiced pre-staging in anticipation of the hurricane:

- Wal-Mart stocked up items that were in high demand based on past hurricane experiences. Consequently, they were able to meet a lot of the needs when they re-opened almost all their stores immediately after the hurricane.
- CVS pre-staged 5,000 CVS care packages in Virginia that were quickly issued to hurricane victims.
- A2H dispatched truckloads of food, water and supplies to the food banks in the affected states before Hurricane Katrina made landfall provided a readily pool of aid for the victims. In particular, they have a standing practice of stockpiling water in the food banks. AmeriCares has worked with A2H to increase the pre-staged quantity of bottled water.

Pre-staging was critical in meeting the immediate needs of the hurricane victims, otherwise the calamity would have been greater. The problem in Hurricane Katrina was

⁶³ The Federal Response to Hurricane Katrina: Lessons Learned, February 2006.

⁶⁴ Louisiana State Gov't estimated 1.2mil people resided in the affected regions, of which 92% were evacuated. The remaining 8% stayed which accounts for 96,000 people.

⁶⁵ MRE – Meals-Ready-to-Eat. It is the standard issue of rations pack for U.S. military personnel during operational deployments where fresh meals cannot be catered.

⁶⁶ Using 8 liters of water for consumption by a person per day.

that too little was pre-staged as the scale of the devastation was under-estimated. If sufficient quantities were pre-staged, it would have buffered the relief supply chain and mitigated the transportation surge that was experienced.

Pre-Staging will continue to be an important feature in disaster preparation. It is further recommended that the Federal and State government should consider collaborating with the industry to establish an integrated pre-staging plan. Large retail outlets and chains have the capacity and the expertise to forward deploy commodities even into disaster zones (as in the case of Wal-Mart). Some form of government compensation packages or financial incentives for the industry in sharing this logistics burden, including cover for damaged and lost goods if the inventory was destroyed by the disaster, would probably be more cost-effective compared to contracted emergency deliveries and services.

6.5 *Manpower*

Many ad-hoc logistics facilities were stood up and operated by inexperienced volunteers during the Hurricane Katrina relief efforts. Many relief organizations had problems staffing the enlarged supply chains that they deployed. The U.S. industry should consider how it can donate the services of its people to the relief effort. The following options are recommended:

- With a coordinated and integrated response, it would be preferred that the industry take a leadership position in establishing the supply chain network as it has the infrastructure and the qualified people to move the aid.
- The U.S. Industry could provide teams of logisticians or composite teams with volunteers to operate interim facilities.

- The U.S. Industry could send qualified personnel to operate the logistics facilities in major relief organizations such as A2H and the American Red Cross.

Note, however, that manpower augmentation is short term as it is a major drain on a corporation's resources. Federal government should consider tax legislation for compensation or tax breaks for services rendered. This would encourage corporations to consider contributing the much needed expertise in running the relief supply chain at least in the initial critical phases. In a most of our case studies, employee satisfaction was highest when they were directly involved in the relief efforts. The pharmacists operating the CVS's mobile pharmacies are an example.

6.6 Business Continuity

A number of the corporations we studied had significant investments in business continuation that played a major role in the disaster relief efforts. There are two components that stood out:

- Dedicated set-up and staff for emergency management. Wal-Mart has a dedicated operations center with a director that is empowered with the responsibility and resources to restore operations to its retail outlets. Similarly, CVS has a full-time emergency management team that is responsible for watching and responding when any of its retail outlets are closed by fires, floods or any other mishaps.
- Back-up systems. This spans from back-up systems in retail outlets such as standby generators, to mobile assets that can be readily deployed to replace infrastructure that was destroyed in a disaster. CVS's mobile pharmacy trailers

were fully equipped with shelves, computer systems and stocked with drugs. The first mobile pharmacy was deployed to a disaster site within 3 days of hurricane Katrina's landfall. SYSCO was able to configure mobile kitchens by retrofitting trailers to operate as 24-hour cooking kitchens for use by the ARC during Hurricane Katrina.

Large corporations have the sophistication, capacity and capability to put in place comprehensive business continuation plans that can be effectively deployed for use in the event of a major disaster. Federal and State governments should recognize this and engage and leverage these unique capabilities into an integrated response effort.

6.7 Ready-to-Use Packs

In the immediate aftermath of a disaster, the main concern in aid distribution is getting the necessary items to victims as quickly as possible for immediate consumption and usage. Two key attributes of aid are usability and portability. Governments use the U.S. Army's MREs because they can be readily consumed without further preparation. CVS's Care Packages are an innovation in the same concept where they have all the basic medical and hygiene products in one pack. Family packs and back-to-school packs were also configured to facilitate rapid aid distribution to families during the Tsunami relief efforts in 2004. Further research into configuring such basic essential packages would be extremely helpful for humanitarian relief operations.

6.8 Training and Drills

Readiness is critical in all emergency response systems. Scheduled training and unscheduled drills are necessary to ensure members of the emergency disaster relief supply chain are adequately prepared to respond when a disaster strikes. Training can help determine where the strengths and weaknesses are in the disaster response network. In an integrated industry response, the responsibility of ensuring system readiness would require leadership in the federal government and the industry to come together to develop and commit to periodic exercises. Corporations can also enhance their readiness internally. For example, Wal-Mart currently has regular training for its emergency operation centers.

6.9 Communication

Poor communication was a primary cause of the failure in Hurricane Katrina's relief efforts and can be categorized into three types: (1) Miscommunication, (2) Lack of Capacity, and (3) Hardware and Means.

- Miscommunication. Miscommunication, especially between government and non-government agencies, caused confusion and duplication of efforts. There even appeared to be miscommunication between staff members within the same agencies at times. This is likely a consequence of the lack of a plan and the procedures to manage a disaster of such a scale, causing confusion among the government agents who are trying to manage the situation. With a proper doctrine and training instituted, miscommunication would be minimized.

- Lack of capacity. Many companies found it hard to reach relief agencies or get a response despite repeated efforts to do so. The experiences cited by Dunkin' Brands, Chef John Folse & Company and CSCMP are typical examples. A2H acknowledged that the scale of response from the industry was simply overwhelming and it was time consuming to engage every call, especially knowing that not all would yield fruitful support to the relief efforts. As such, many relief agencies preferred to work with corporations they already had partnerships with or pre-arranged agreements. ALAN's matching board initiative provides a proactive alternative approach to disseminating information by allowing relief agencies and corporations to post what they need or have; this could potentially alleviate the surge in telephone communications.
- Hardware and Means. The destruction of most of the communications infrastructure in New Orleans and surrounding areas created a huge communications gap. Satellite phones, cell phones on selected carriers and two-way radios were used for communication during the initial phases of the relief operations until phone lines could be repaired. For future planning, it is important for government agencies and relief agencies to have a back-up communication plan during emergencies. This would be even more critical when IT is fully deployed for use to support humanitarian operations and to coordinate the industry supply chains. A number of the IT solutions currently being developed are web-based, and as such, internet connectivity and redundancy would be a necessary back-up consideration.

6.10 Education

The American public needs to be educated on what to send and how to send donations when a disaster strikes. One of the biggest lessons the public needs to learn is that in times of emergency, the best way to help is to donate money to relief agencies. Relief agencies can usually deal with monetary donations more effectively and efficiently than they can deal with product donations. Agencies may not have the staff, warehouse space, or equipment to handle product donations. By donating money, relief agencies can order the goods they need, when they are needed, and get them exactly where they need to go. After Hurricane Katrina, many unscheduled deliveries of unsolicited donations went unused because relief agencies did not have the storage capacity or the manpower to handle those items. Also, many of the donated items were unusable such as dirty old clothes, toys, and expired food.

Corporations also need to be educated on the disaster relief process in order to understand how they fit into it and how they can improve it. When developing ALAN, education has been one of the biggest problems they faced.

6.11 Pre-Arranged Agreements

Chef John Folse & Company had some of its meals donations turned down by major relief agencies because they did not have a pre-arranged agreement. Chef John Folse & Company felt that things would have went much smoother for them during the relief operations if they had a pre-existing agreement or if it had prior approval as a food donor with these large relief agencies.

Other companies wanted to help but did not know whom to contact or what to donate. If companies had arranged relationships with relief agencies before a disaster occurred, communication would have been much easier and donations could have been carried out more effectively.

6.12 *Sustaining the Relief Efforts*

The scale of destruction brought by Hurricane Katrina was unprecedented and many of the evacuated people could not return to their homes as the reconstruction efforts were protracted. As media attention moved on and companies moved back to normal operations, donations started to dwindle. America's Second Harvest highlighted this trend and many private corporations we interviewed did wind down their operations after about 2 months. Under a protracted relief situation, there is a need for the Federal or State government and relief organizations to continue to impress the need for sustained support on the private corporations.

Partnership is a channel for relief organizations to keep their corporate partners abreast of the needs and sustain the flow of aid and donations on a longer term basis, especially when there is a standing commitment which can be channeled to meet specific needs. ALAN's matching board initiative is another channel that could potentially fill this gap as it is designed with the objective to replenish and sustain relief efforts. It can maintain visibility by continuing to provide the service for relief organizations to post their needs and encourage industry response after the initial relief efforts have been met.

6.13 Conclusion

The initiatives proposed in this chapter are essential to enhance the industry's effectiveness in contributing towards a disaster relief. It increases the industry's capacity, readiness and responsiveness through better integration with relief agencies. However, our research found that public-private partnership has a more immediate and far reaching

7 Framework for a Corporate 'Giving' Strategy

"You want to re-center from a government-dominated, marginally assisted system to a genuinely collaborative partnership, because in fact the private sector brings more speed and more resources and more capability than government has internally."

- Newt Gingrich, former Speaker of the US House of Representatives

Private corporations' contribution to hurricane Katrina's relief effort has been unprecedented in scale, contribution and significance. Louisiana's Department of Social Services records, tabulated below, show that as of October 5, 2005, private entities, parish governments, faith-based and nonprofit organizations were sheltering almost as many people as the American Red Cross, but in almost four times as many shelters.⁶⁷

Table 5: Number of Shelters and Evacuees housed by various organizations in Louisiana as of October 5, 2005

Organization	Shelters Provided	Number of Evacuees Housed
A. Churches and Faith-based organization	123	5,780
B. Non-profit, Private entities or Parish Gov't	62	6,733
Subtotal (A+B)	185	12,513
American Red Cross	55	13,617
Total	240	26,130

Source: Weathering the Storm: The Role of Local Nonprofits in the Hurricane Katrina Relief Effort by Tony Pipa, Aspen Institute, 2006

These private entities, parish governments, faith-based and nonprofit organizations received little or no aid from the government; and, as such, it would not be

⁶⁷ Weathering the Storm: The Role of Local Nonprofits in the Hurricane Katrina Relief Effort by Tony Pipa, Aspen Institute, 2006. <http://www.aspeninstitute.org/atf/cf/%7BDEB6F227-659B-4EC8-8F84-8DF23CA704F5%7D/NSPPNonprofits%20and%20Katrina.pdf>

far off to suggest that the bulk of the resources required to sustain hurricane victims came from private corporations. For 2005 hurricane relief, total donations from Business Roundtable⁶⁸ members amounted to \$362 million of which approximately a third was in kind and the remaining two-thirds in cash⁶⁹. These statistics provide evidence that the U.S. industry has the capacity, capability and more importantly, the will to undertake a significant role in disaster response and relief. The case studies presented in previous chapters also illustrate the variety of private involvement, the wide spectrum of aid and services they provided, and the broad base support that is availed to the relief effort. Reports by the Department of Homeland Security⁷⁰ and the Business Executives for National Security⁷¹ on the Hurricane Katrina relief efforts recognized that neither the public sector nor the private sector alone can handle a large national disaster such as Hurricane Katrina. The public sector and the private sector must collaborate to provide the necessary scale of relief. Both reports specifically recommended the need for a closer public-private partnership. To promote effective public-private partnership for disaster relief, corporations would be interested to determine how they can value-add with the greatest impact and yet with ease. We recommend that the answer lies with the nature of a corporation's business and its supply chain.

⁶⁸ The Business Roundtable is a prestigious group formed by chief executive officers of leading U.S. corporations to promote pro-business public policy in the U.S.

⁶⁹ Hurricane Katrina: Detailed List of Member Donations, <http://www.businessroundtable.org/taskForces/taskforce/document.aspx?qs=7275BF159FA5D14488A12D239EA5B333E9D43F3CC663FB5A975> (last viewed 30 April 2007)

⁷⁰ The Federal Response to Hurricane Katrina: Lessons Learned, February 2006.

⁷¹ Getting Down to Business: An Action Plan for Public-Private Disaster Response Coordination, January 2007. <http://www.bens.org/Getting-Down-To-Business.pdf>

7.1 The Strengths of Industry Supply Chains in Disaster Relief

Our studies found that the greatest advantages quick service restaurants such as Dunkin' Donuts and McDonald's, and large retailers such as Wal-Mart and CVS/pharmacy, have is their local presence in cities and towns across the U.S., which most used effectively to distribute aid to the hurricane victims within their vicinity. These quick service restaurants and large retailers have established supply chains with the capacity and capability to move and distribute large volumes of food and supplies across the U.S. Another example, SYSCO, the U.S.'s largest foodservice marketing and distribution company, has an extensive distribution network of 156 distributing locations in almost all states, giving them a nationwide reach to provide emergency support. Their multiple inventory locations provide a flexibility and quick response capability when gathering goods to be donated. Its local presence gives it intimate knowledge of local road networks, which becomes invaluable when major roads and bridges are destroyed during a disaster and normal supply chain routes cannot be used.

The six industry case studies we presented reveal that a private company's ability to contribute to disaster response is attributed to two components – (1) its consumer reach and (2) its supply chain.

Retail Outlet network. A company's "consumer reach" is defined as the company's physical ability to reach out to consumers,⁷² it is manifested essentially in its

⁷² The consumer defined here refers to the general public who are consumers of a product or service. It excludes companies and organizations. The term "beneficiary reach" is used for relief agencies.

retail outlet that sells products or provides services to consumers directly.⁷³ This is further subdivided into two sub-components – (1) social responsibility commitment to local community, (2) density and geographical coverage of its stores.

(1) Many corporations strongly encourage their retail outlets to integrate with and contribute to the community it serves. Most retail outlets run community projects, support local charities, develop informal local philanthropic networks and have become part of the community's social fabric. It was observed that corporations and retail outlets with strong commitment to the community it serves stayed on to help out during a disaster.

(2) A company's density and the spread of its physical retail outlet network translate directly into the physical capability to reach out to the larger population. A very good example of a company with high density and extensive physical capabilities is Wal-Mart. Wal-Mart has a philosophy of serving the suburban community and as such, establishes outlets in as many towns as it profitably can. Being a large consumer retailer, Wal-Mart has large stores and carries sizeable inventory, making it particularly effective as a first responder to provide aid to a large population of the victims in the immediate aftermath of Hurricane Katrina, especially in the rural areas where government efforts were not forthcoming. Another example is McDonalds' high store density in New York City that allowed them to serve multiple locations within the urban city during the 9/11 incident. A corporation's retail network effectiveness in disaster relief can be defined as follows:

⁷³ Physical presence is a defining factor in consumer reach for humanitarian relief as they provide direct and immediate points of distribution; as such e-commerce or internet-based instruments are excluded.

Ability to Contribute = Community Commitment x Density & Reach

Corporations have different business strategies in different regions; consequently, the retail network varies from one region to another. As such, a corporation's ability to contribute is not uniform but varies according to the geographical context of its retail network. For businesses that have limited or no consumer reach entities, they would be better off to partner with other businesses or NGOs that have effective local distribution networks.

Supply Chain. A company's supply chain is the sustaining power of its business. In disaster relief, it is the "lifeline" of aid and sustains the relief effort. The greater the control a company has over its supply chain, the more it is able to commit or divert the necessary resources to sustain the flow of aid. There are essentially two key components of a supply chain network: (1) the distribution centers or warehouses and (2) transportation. Both are vital during a major disaster as the demand surge created will quickly consume any existing spare capacity within the supply chain.

(1) Warehousing is essential as an intermediary point to hold aid and from which to dispatch it when the demand is clear. The need for warehousing was clearly demonstrated in our case studies and the primary reasons were:

- Uncertainty. Information will not be complete as news of survivors will emerge over time. A network of warehouses reduces risk of goods damaged due to disasters, whilst at the same time providing flexibility and quick response when channeling aid to the desired locations.

- Buffer. Additional capacity is required to handle the increased amount of goods flow after a major disaster and also to mitigate impromptu good-will deliveries that do not match immediate need.
- Pre-positioning. Staging a pre-determined amount of aid forward in potential disaster areas or just outside those areas, allows a pool of readily available aid to provide immediate response and at the same time alleviate the strain on the supply chain during the first few days.

(2) Transportation is the other key element. All companies we interviewed shared the common view that transportation resources are a challenge to find during a disaster. In Katrina, the situation was made worst as transportation assets within the disaster area were mostly rendered useless due to the massive flooding. For example, SYSCO's fleet in New Orleans was totally incapacitated. Many roads, bridges and railroads were also destroyed, compounding the challenge of aid delivery. Many had to leverage on their goodwill or strong business relationships with carriers to obtain the few trucks that they could muster to be committed for the disaster relief efforts.

Supply chain control ranges from the highest of full ownership of the entire supply chain, to having a cooperative as a 3PL where a company retains considerable control, to being a major client of a 3PL logistics or transportation company with which you have substantial influence, to completely outsourcing your supply chain to a large 3PL where you have limited influence.

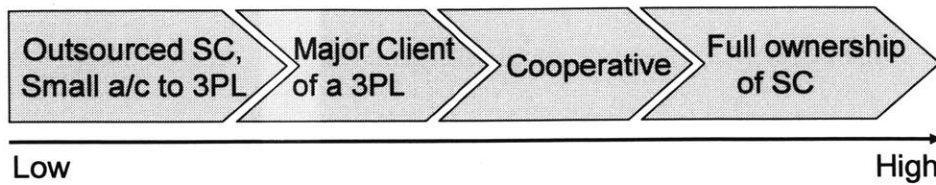


Figure 19: Categorization of Supply Chain organizations in terms of Control

The higher the level of control that a company has over its supply chain, the faster it can free up and commit resources to disaster relief, and the better it can be at **sustaining the relief effort**. In disaster relief, time is of essence. The speed of the decision cycle has a significant impact, especially during the initial phases of the relief effort.

7.2 Framework

The 2 x 2 matrix below plots the relative positions of the companies that we studied based on the consumer reach and supply chain control criteria.

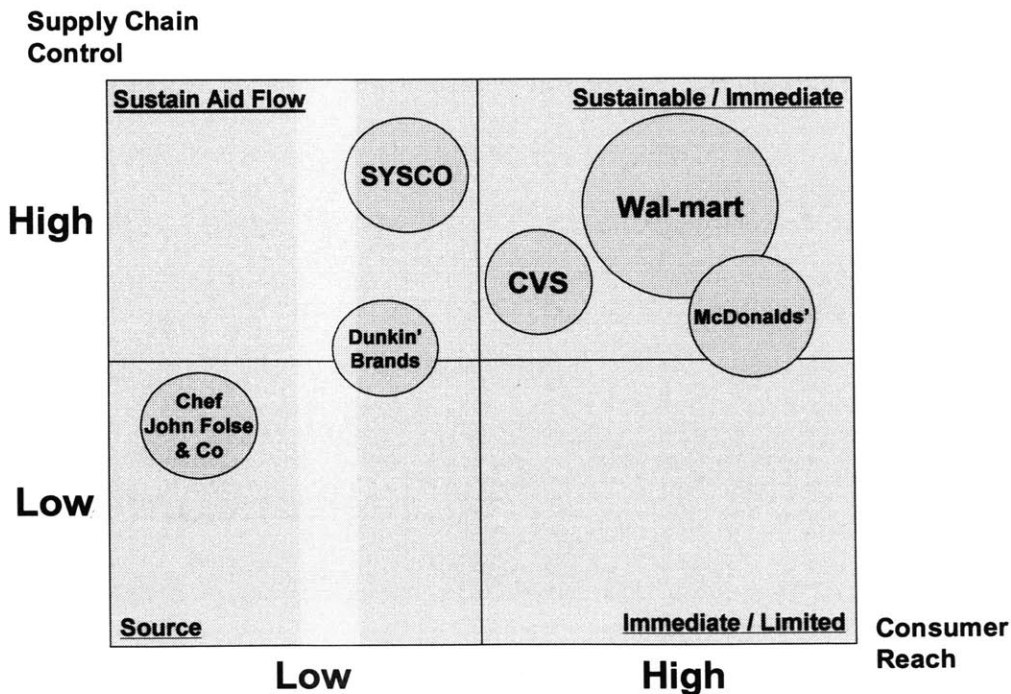


Figure 20: Classification of Private Corporations using Supply Chain Control – Consumer Reach Matrix

- High Supply Chain Control & High Consumer Reach (H-H). H-H companies are those that have a high degree of control over their supply chains and have an extensive network of retail outlets in the disaster area. Examples in our case studies include Wal-Mart, CVS/pharmacy and McDonald's. Our study found these companies to be amongst the first to respond in the immediate aftermath of Hurricane Katrina, providing broad-base support to large populations and staying on to sustain and support the relief efforts. They had the greatest impact to the welfare of the hurricane victims.
- High Supply Chain Control & Low Consumer Reach (H-L). H-L companies have a high degree control of its supply chain but have limited retail outlets within the disaster area. Examples in our case studies include SYSCO and Dunkin' Brands.⁷⁴ These companies have limited or no ability to distribute aid effectively to the hurricane victims by themselves as they have too few retail outlets or no outlets at all to serve this purpose. Instead, they distributed through NGOs, faith-based organizations, charities and local community groups that run shelters, homes and hospitals that housed the hurricane victims. They are best at running supply chain operations which include production or sourcing, warehousing and transportation. As such, they are most adept at sustaining the aid flow, as evidenced in the Chef John Folse & Company and the Dunkin' Brands case studies.

⁷⁴ Dunkin' Brands is considered a H-L entity in the context of Hurricane KATRINA as the number of retail outlets they have in the affected regions of LOUISIANA and MISSISSIPPI was low.

- Low Supply Chain Control & High Consumer Reach (L-H). L-H companies are retail outlets that have limited influence over their supply chains. Our case studies did not have any companies in this category. However, based on the categorization, they can include regional or local convenience chains, mom & pop stores – small to medium size businesses that have a local footprint. By virtue of their local retail presence, they can be a source of immediate aid, but would likely be of limited volume and staying power simply because they do not carry a large inventory and do not have a supply chain that can sustain it. They have limited contribution unless they partner with suppliers, i.e. H-L or H-H companies, which can ensure a constant flow of aid.
- Low Supply Chain Control & Low Consumer Reach (L-L). This category comprises companies that have limited control over their supply chains and do not own or have limited retail outlets. L-L companies can include manufacturing companies who retail through agents or retailers; or small / medium size companies outside the disaster zone. They can contribute by being the source of aid – i.e. contribute their products that match a need or money. An example would be Chef John Folse & Company, a Louisiana food product manufacturer, which cooked “hot meals” for distribution to hurricane victims.

Figure 20 below summarizes the characteristics of the 4 types of companies:

		Supply Chain Control	
High	<u>Sustain Aid Flow</u>	<u>Sustainable / Immediate</u>	Consumer Reach
	<ul style="list-style-type: none"> • Limited or no means to reach victims Sustains Aid flow • 2nd Responders 	<ul style="list-style-type: none"> • Highly effective in getting aid to victims immediately • Sustainable/ Autonomous <ul style="list-style-type: none"> • Large Scale • Can be 1st Responders with Govt/ NGO 	
Low	<u>Source</u>	<u>Immediate / Limited</u>	
	<ul style="list-style-type: none"> • Limited ability to participate on itself • Source of Aid 	<ul style="list-style-type: none"> • Highly effective in getting aid to victims immediately • Limited vol / sustainability • Limited 1st Responders 	
		Low	High

Figure 21: Roles of Private Corporations in Disaster Relief using the Supply Chain Control – Consumer Reach Matrix

Applying the same framework to NGOs, charities, faith-based organizations in our case studies, we were able to categorize them based on their supply chain capabilities and found that the categorization criteria and the contribution effectiveness arguments apply as well. For a more accurate characterization of these organizations, we substituted the term “beneficiary reach” in place of “consumer reach”. Both terms refer to the final recipient of goods or services that a company or organization provides.

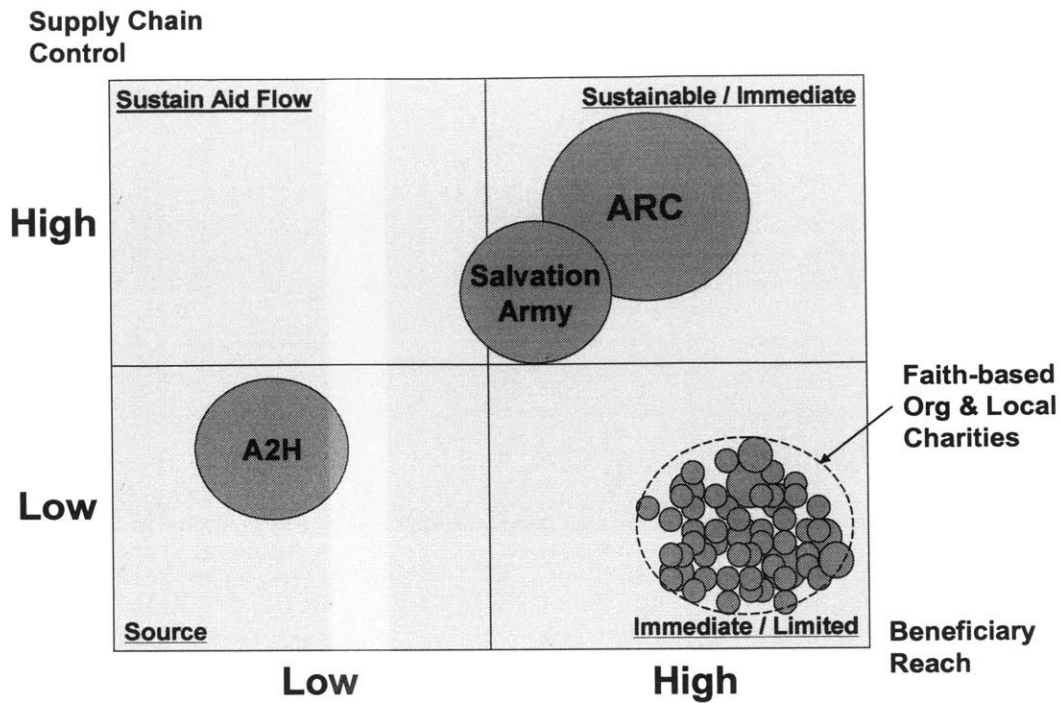


Figure 22: Classification of Relief Organizations, Faith-based Organizations and Local Charities using Supply Chain Control – Beneficiary Reach Matrix

- The American Red Cross (ARC) is the nation’s largest NGO and has been mandated in its charter to be a first responder in disaster relief and the primary agency for Mass Care under the Department of Homeland Defense’s National Response Plan. To meet its mission, the ARC has invested heavily in its logistics capability – from owning a nationwide network of warehouses, which they tripled in volume last year, a dedicated transport fleet, to the ability to organize and deploy shelters, mass feeding and basic medical care for disaster victims. Hence, the ARC falls under the H-H category. Another well known charity organization that falls into this category is the Salvation Army.
- Our case studies did not find any relief organizations, faith-based organizations or charities that fall into the H-L category. It is not surprising as most of these organizations are generally created to work directly with

beneficiaries. Also, the high cost involved in having a robust supply chain is too prohibitive. The options of working on preferential rates for warehouse and transportation, utilizing backhaul capacity or excess warehouses are more cost effective methods and common practice in the 'relief' industry.

- The faith-based organizations and local charities that sheltered and took care of almost half of Hurricane Katrina's victims belong in the L-H category. They are small organizations that clothed, fed and put a roof over the heads of the hurricane victims, which normally do not have networks beyond their operating region. Some exceptions include some faith-based organizations that have strong external supporting networks that provided a steady stream of volunteers and some vehicles but were unable to sustain a constant flow of aid by itself.
- Organizations that fall in the L-L category are generally sources of aid or money and can include organizations that contribute indirectly through research, lobbying channels for policy changes and IT expertise that can add value to disaster relief efforts. Examples include the United Way which is essentially a fund-raising non-profit organization; the Business Executives for National Security, Business Roundtable, Fritz Institute which are 'think-tank' organizations that undertake academic research and collaborate with private industries to enhance disaster response; and Aidmatrix, a non-profit organization that is dedicated to enhancing effective disaster response through the correct application of IT. In our case study on A2H, it is a L-L entity as it is essentially a source of food aid. A2H is a network of food banks that operates warehouses. Whilst some food banks may have a small private transportation fleet, most depend heavily on

companies donating backhaul capacity or giving low preferential rates to move food products. Hence A2H's control over its supply chain is considered low due to its limitation in transportation. They do not distribute food aid directly to beneficiaries but through their partners such as faith-based organizations, local charities and community groups.

7.3 The 'Giving' Strategy

The Supply Chain Control – Consumer / Beneficiary Reach matrix provides a framework to correlate a business or NGO's supply chain strengths to the optimum type of contribution in a disaster relief effort. It classifies corporations and NGOs into four quadrants of different roles they can play and different levels of effectiveness they can have in disaster relief contribution. It does not, however, mean that companies that fall under quadrants other than the H-H category will be less successful or less effective in contributing towards a disaster relief, although its effectiveness will be limited if it contributes alone. On the contrary, they can be effective contributors through properly identified partnerships with other corporations or NGOs that have complementary Supply Chain Control – Consumer / Beneficiary Reach attributes.

7.3.1 Partner with your NGO or Business Partners of Choice

The Supply Chain Control – Consumer / Beneficiary Reach matrix can be used as a framework for private corporations, NGO, faith-based organizations, charities and local community groups to develop their strategy of “giving”, essentially by identifying complementary partners. The following partnership strategies are recommended to maximize disaster relief contribution effectiveness:

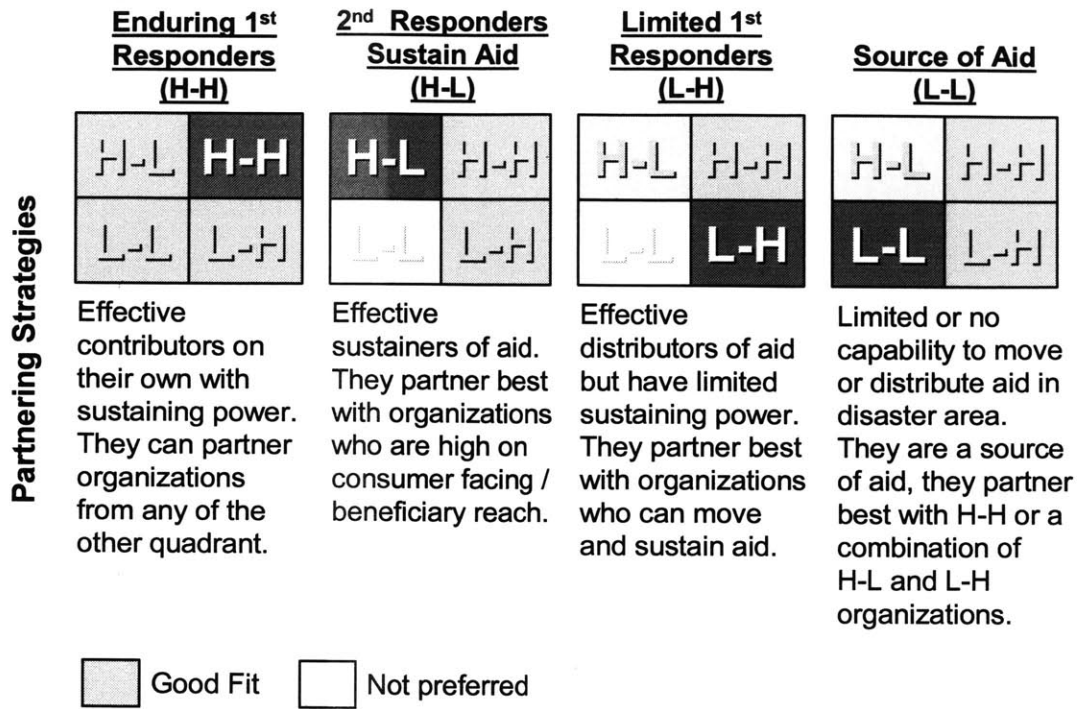


Figure 23: Supply Chain-based Partnering Strategy for Private Corporations and NGOs.

For example, A2H, who is low on Supply Chain Control and low on Beneficiary Reach, would benefit from a tri-partite partnership with L-H and H-L organizations. Our case study reveals that A2H achieved substantial local reach through local faith-based organizations and charities, and it was able to sustain its food aid flow through its corporate partners such as Dunkin’ Brands. A similar success story was also witnessed in Chef John Folse & Company’s “hot meals” operations. It partnered upstream with its suppliers such as SYSCO and Dunkin’ Brands for supplies, and downstream with faith-based organizations, local charities and community groups to distribute the “hot meals”.

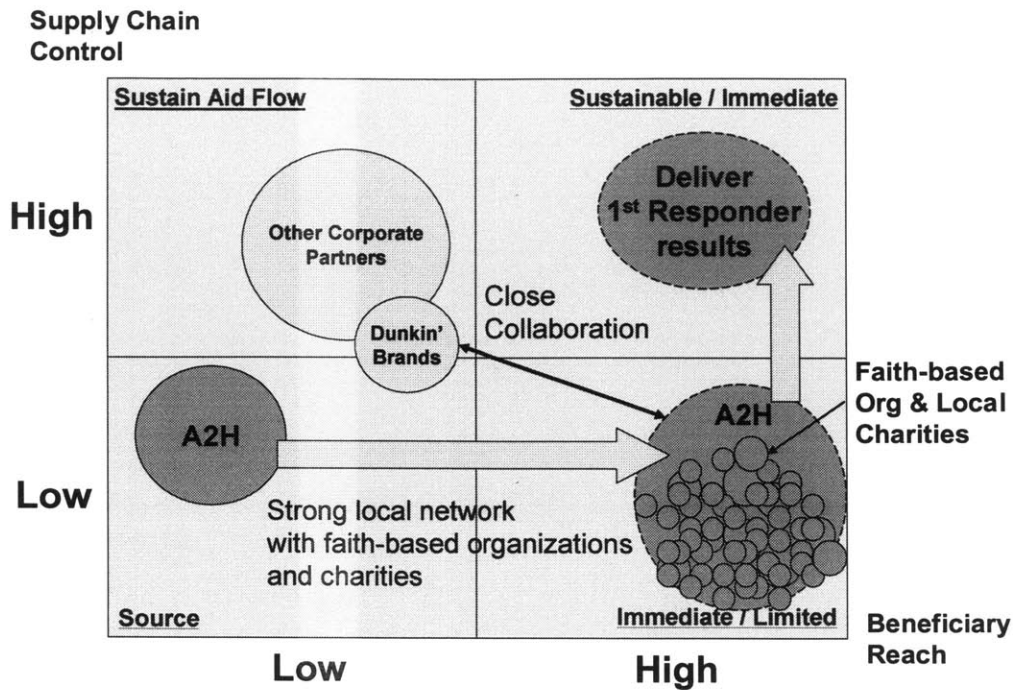


Figure 24: Positive effect of right partnership between entities

One would also recognize that organizations that forge strong partnerships can be elevated to the next more effective quadrant when viewed together. The A2H case study described above is a useful illustration (See Figure 23). The food banks have long standing relationships with local faith-based organizations, local communities and programs that feed the hungry and poor. They work with these entities on a daily basis in distributing donated food stuff. Consequently, this informal working relationship makes the food banks exceptionally well poised in understanding the needs of the local population and in re-establishing links after a major disaster. Organizations naturally tend to seek to re-establish working links and relationships they had before a disaster occurred as it is the most expedient and effective way to resume operations. Thus, when A2H food banks and the local faith-based organizations and charities are viewed as a well integrated system, it would be categorized as an L-H joint entity. During Hurricane Katrina, when this integrated system of A2H and the local faith-based organizations and

charities was coupled with private corporations who have significant control over their supply chain, such as Dunkin' Brands, the result was a sustained effective food distribution to hurricane victims. They were delivering an H-H quadrant performance - A2H distributed nearly 83 million pounds of food or about 64 million meals to the Gulf Coast states and southern Florida.

Therefore, when searching for the right partners, private corporations need to look deeper and understand how deep and extensive the NGO, relief organization and charity network is, and assess it based on an integrated system. Private corporations should also take cognizance of the local context of their supply chains because corporations have different market strategies and as such have different degrees of market presence in different regions. Adapting a different 'giving' strategy according to the localized supply chain makes perfect sense.

Partnerships should be developed early for a number of reasons:

- Partnerships signify a commitment on both parties.
- Relief organization or charity has greater certainty of its source of support.
- Donor is assured of a complementing partner that would be able take their donations and be effective in delivering the aid according to agreed guidelines in line with the donor's corporate responsibility philosophy.
- Greater operational ease on coordination as rules and processes have been worked out; even better if corporate donation is integrated into routine work.
- Resources can be activated and secured quickly in event of a major disaster.

- Avoids big swings in the industry when a crisis occurs such as in the transportation segment during Hurricane Katrina relief operations.

Over and above this framework, there are two other factors in the ‘giving’ strategy that should be pursued in parallel to work hand-in-glove with the U.S. emergency response framework: (1) contribute your core competency and (2) collaborate with your industry.

7.3.2 Contribute your Core Competency

Companies are most effective when they contribute their core competence during a disaster, especially so when the company specializes in a certain product or service. CVS/Pharmacy is a case where the company focused on its core competency as a retail pharmacy and extended its routine emergency procedures and assets to be used in times of a major disaster relief effort. Chef John Folse & Company made local taste “hot meals” to provide nourishment and solace to the hurricane victims in Louisiana. Wal-Mart exploited its extensive reach of its retail outlets to serve suburban communities that somehow did not receive government aid. SYSCO used its local knowledge and contacts to contribute its food products effectively.

7.3.3 Collaborate within your Industry

Companies of the same genre (i.e. supplying similar items or services) must collaborate to establish an industry level response with a holistic picture of the resources available and the distribution reach of the combined private distribution network.

It was evident in Hurricane Katrina’s relief efforts that the existing humanitarian supply chain and the federal emergency disaster response system does not have enough

reach to cover all areas when a disaster strikes. Big cities usually get the most attention when a disaster strikes, while remote outlying areas are sometimes overlooked. In this instance, Wal-Mart filled a gap in the humanitarian web of coverage as it used its retail outlets in the suburban areas to support the small parishes and counties that it served. Wal-Mart is a good complementary relief network to the Federal and State relief network.

A very successful model of public and industry level collaboration was the drug response effort where the Centers for Medicare and Medicaid Services and the U.S. Department of Health and Human Services worked with the consortium of CVS/pharmacy, Walgreens, RiteAid, Wal-Mart pharmacies and other local pharmacies to form an integrated response network. They were able to develop an integrated plan using the combined retail network of all the pharmacies, coordinate replenishment of drugs based on demand feedback and deploy mobile pharmacies, courtesy of CVS/pharmacy, to areas where reinforcement was required. This model should be replicated for other key categories of relief support such as food, which can leverage on quick service restaurants; and basic items leveraging on major retail outlets.

The ALAN is an initiative in the right direction. It seeks to tap into the supply chain experience and expertise of its participating companies and associations to mobilize the right aid and have it delivered on time to the right place in the right quantity. To this end, forging the partnership with NVOAD is essential to gain the understanding of the aid demand picture. Consolidating the industry membership, now standing at nine associations, would provide the clout of the industry muscle to respond in the most expeditious manner.

It is further recommended that on top of being a matching board that serves the spontaneous matching of aid demand and supply, ALAN can utilize the framework proposed to help corporations who are contributing for the first time or who choose to participate on a selective basis, to identify and build a temporal relationship with another entity – another corporation or NGO, charity or faith-based organizations, to establish a more effective partnership in delivering aid. ALAN can ask corporations to answer a number of questions that can identify and categorize the corporation into one of the four quadrants. Thereafter, it can provide an explanation of the ‘supply-chain based partnership framework’ and offer a list of private corporations, NGOs, charities and faith-based organizations that members can seek to establish a ‘giving’ relationship to support the ongoing disaster relief operations.

8 Conclusion

It is unfortunate that it took such a devastating disaster as Hurricane Katrina to motivate people to make improvements in emergency planning and humanitarian logistics. Many developments and improvements are currently afoot; FEMA has started a number of initiatives to enhance private-public partnerships and many think-tank organizations have offered ways to do it. In humanitarian disasters, logistics plays a dominant role in providing relief. Consequently, it is our belief and also substantiated from our research that a partnership framework built on supply chain attributes is the most compelling approach to effective private contributions towards disaster relief. The initiatives recommended in chapter 6 will take time to materialize but the private-public partnership can start immediately and put private corporations, NGOs, relief agencies, charities and faith-based organizations in good stead to face the challenges of another major disaster.

Although the research was made in the context of “major disasters”, the strategies developed were found to be applicable for long-term “giving”. Companies eager to enhance their participation in disaster relief should consider making “corporate giving” an ongoing concern and culture in their business, as it builds the foundation, familiarity and relationships that will come into play during a major disaster. Future research can consider adapting the “giving” framework on an international level.

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Appendix A: Acronyms

A2H	America's Second Harvest
ALAN	American Logistics Aid Network
ARC	American Red Cross
BENS	Business Executives for National Security
BRN	Business Response Network
CSCMP	Council of Supply Chain Management Professionals
DC	Distribution Center
DHS	Department of Homeland Security
DRN	Disaster Resource Network
IFRC	International Federation of the Red Cross and Red Crescent Societies
FEMA	Federal Emergency Management Agency
GIK	gifts-in-kind
HLS	Humanitarian Logistics Software
ICS	Incident Command System
IT	Information Technology
NIMS	National Incident Management System
NPFA	National Fire Protection Association
NVOAD	National Voluntary Organizations Active in Disaster
RMHC	Ronald McDonald House Charities

Appendix B: Timetable

Chronological Record of the Build-up of Hurricane Katrina and the pre-landfall preparations.⁷⁵

Date	Hurricane Category	Activities
Aug 23 (Tue)	National Weather Service (NWS) reported Tropical Depression Twelve formed over Bahamas.	<ul style="list-style-type: none"> Federal Department and Agency Emergency Operations Centre (EOC) and USNORTHCOM began monitoring the hurricane.
Aug 24 (Wed)	Tropical Depression strengthened into a Tropical Storm, and was assigned the name Katrina.	<ul style="list-style-type: none"> FEMA's HLT deployed to the National Hurricane Center to provide forecast and technical advice. USNORTHCOM issued warning orders to supporting commands.
Aug 25 (Thu)	<p>3:30PM Hurricane Katrina was upgraded to a Cat 1 Hurricane and forecasted to make landfall in Florida.</p> <p>6:30PM Hurricane Katrina made landfall at south Florida near Miami-Dade and Broward County line with sustained winds of up to 80mph, 14-16 inches of rain in some regions.</p>	<ul style="list-style-type: none"> Alabama and Mississippi activated their EOCs. FEMA pre-staged over 400 truckloads of ice, more than 500 truckloads of water, and nearly 200 truckloads of food at logistics centers in Alabama, Louisiana, Georgia, Texas and South Carolina. ERT-A Teams put on alert. Conducted first video teleconference call.
Aug 26 (Fri)	<p>Briefly weakened into a Tropical Storm but strengthened over the course of the day into a Cat 2 Hurricane.</p> <p>Accurate forecasts were made that Katrina would make landfall near New Orleans as a Cat 4 or 5 Hurricane. (56 hours of advance warning)</p>	<ul style="list-style-type: none"> Governors of Louisiana and Mississippi declared States of Emergency. Alabama, Louisiana and Mississippi EOC placed on highest manning status. Louisiana State Police / TCC issued mobilization orders. Louisiana National Guards (NG)– 2,000 mobilized and established JOC at New Orleans Mississippi NG given Warning Order – 750 activated, EOC established in Jackson.
Aug 27 (Sat)	Katrina strengthened to a Cat 3 Hurricane before dawn, doubled in size over the course of the day (85 mi to 160 mi in	<ul style="list-style-type: none"> 4pm Louisiana and Mississippi established contra-flow for its highways, began implementing Ph I of Louisianan Emergency Evacuation Plan. 7pm, traffic backup to Louisiana / Texas border.

⁷⁵ The Federal Response to Hurricane Katrina: Lessons Learned, Department of Homeland Security, February 2006. <http://www.whitehouse.gov/reports/katrina-lessons-learned.pdf> (last viewed May 9, 2007)

Date	Hurricane Category	Activities
	radius)	<ul style="list-style-type: none"> • All local government issued evacuation orders. • Voluntary / mandatory evacuation orders issued. • Shelters established by ARC, local governments in schools / churches / Superdome / Ford Center for people with special needs. A special needs shelter “is intended for individuals who have no other resources and who need assistance that cannot be guaranteed in a regular shelter, i.e. medication that requires refrigeration, oxygen equipment, etc.” • FEMA HQ commenced full manning. • Region VI had staged at Camp Beauregard 270,000 liters of water, 680,000 pounds of ice, 15,120 tarps, and 328,320 Meals Ready to Eat (MRE).⁹⁵ By 5:00 PM EDT, the quantity of water stored at Camp Beauregard had doubled to 540,000 liters.⁹⁶ More commodities were pre-staged elsewhere in Region VI. • The FEMA Logistics Representative reported that 102 trailers were “uploaded with water and Meals-Ready-to-Eat” at the FEMA Logistics Center in Ft. Worth, Texas. • President Bush signed a Federal emergency declaration for the State of Louisiana.
Aug 28 (Sun)	Katrina strengthened to a Cat 4, and later Cat 5 Hurricane in 6 hrs. “not only extremely intense but also exceptionally large.”	<ul style="list-style-type: none"> • President Bush signed the Federal emergency declaration for the State of Mississippi and Alabama. (Rare to declare state of emergency before landfall, only precedence is in 1999 Hurricane Floyd). • President Bush called Governor Blanco to urge that mandatory evacuation orders be issued for New Orleans, which Governor Blanco did. • By late afternoon, because of the high winds, evacuation process was terminated 12 hrs earlier before landfall. Last passenger flight departed at 4:30 PM and the airport was officially closed at 6:43 PM. Contra-flow operations throughout the region ceased at 5:00 PM. • 10,000 – 12,000 evacuees est to have arrived in Superdome. Requests to send more aid to Superdome could not be met by FEMA due to weather. ARC refused to send personnel as they deemed it unsafe.