

THE PENNSYLVANIA STATE UNIVERSITY
SCHREYER HONORS COLLEGE

DEPARTMENT OF SUPPLY CHAIN AND INFORMATION SYSTEMS

HUMANITARIAN AID, DISASTER RELIEF, AND THE SUPPLY CHAIN

TARA BRANIGAN
SPRING 2012

A thesis
submitted in partial fulfillment
of the requirements
for a baccalaureate degree
in Supply Chain and Information Systems
with honors in Supply Chain and Information Systems

Reviewed and approved* by the following:

Dr. Robert Novack
Associate Professor of Supply Chain Management
Thesis Supervisor

Dr. John Spychalski
Professor Emeritus of Supply Chain Management
Honors Adviser

* Signatures are on file in the Schreyer Honors College

ABSTRACT:

This paper details and analyzes four significant world events occurring in the past one hundred years requiring a unique supply chain in the area of humanitarian aid and relief. These events are: The Berlin Airlift of the 1940s, the massive destruction brought upon by Hurricane Katrina in 2008, the devastation that is still present in Haiti following the 2010 earthquake, and the earthquake and ensuing tsunami that desolated Japan in 2011. The metrics observed include responsiveness (the speed in which the relief efforts were implemented); the coordination of the parties involved in the aid (i.e. the effectiveness of the lines of communication involved); and a fundamental analysis of the resulting outcomes. This topic is of utmost importance as supply chains become ever more complex, and the addition of often unpredictable or never before encountered disaster situations amplifies this complexity. In conclusion, the paper will provide a clear analysis of where humanitarian relief is at present and where it needs to be in the future to enable better preparation and inevitably save lives and prevent such occurrences from being capable of wreaking such insurmountable havoc.

Table of Contents:

Abstract.....i

Table of Contents.....ii

Introduction Methodology.....1

Analysis.....2

 I. The Berlin Airlift.....2

 II. Hurricane Katrina.....6

 III. Haiti Earthquake.....12

 IV. Japan Tsunami.....17

Analysis & Conclusion.....22

Works Cited.....26

INTRODUCTION:

Hurricane season is inevitable. Earthquakes are unavoidable. Natural disasters are imminent. Unpredictable events occur regularly and oftentimes without sufficient warning. Even when they can be somewhat foreseen, efficiently acquiring the necessary means for relief is no easy task and it certainly does not come without a significant cost—monetary and otherwise. To say that the supply chain is an important part of this relief effort would be a vast understatement. Humanitarian supply chain endeavors are integral and essential components of disaster relief.

In the past one hundred years alone, these practices have evolved and gained prominence, but there is still ample opportunity for improvement. By analyzing various cases of humanitarian efforts of the past, as well as communicating directly with those involved in the relief aid today, strategic suggestions for more efficient and effective practices can be generated for the future. The focus of this research is to examine efforts involved with the following events: the Berlin airlift of the 1940s; the earthquake and continuing devastation in Haiti; Hurricane Katrina, and the destructive tsunami that traumatized Japan.

The methodology will consist of the thorough examination of four diverse scenarios in different areas across the globe, while still providing various commonalities for comparison. The metrics will include: responsiveness (the speed in which the relief efforts were implemented); the coordination of the parties involved in the aid (i.e. the effectiveness of the lines of communication involved); and a fundamental analysis of the resulting outcomes. In addition, the current opinions of those who have worked and continue to work directly in efforts such as these can provide valuable insights and recommendations for the necessary future steps that need to be taken in order to optimize relief efforts so that the minimum amount of destruction is inflicted and endured in any given scenario.

Chapter 1: The Berlin Airlift

BACKGROUND:

When the notion of “humanitarian relief” is mentioned, natural disasters are typically the first to come to mind. However, the hostile situation in Germany in the late 1940s presented a unique scenario during which humanitarian aid was necessary and required an atypical strategy for implementation. The largest humanitarian operation ever undertaken by the United States Air Force, the Berlin Airlift presents a distinctive case in which an intentional blockade, and not an unpreventable disaster, was the root of the problem. Naturally, examining the Berlin Airlift through a modern lens requires a more objective outlook, as the resources and technology available were certainly not what they are today. Therefore, it is important to keep in mind the proportionality of the humanitarian response. In other words, the significance of certain events and efforts in the given time period can still correlate to those taking place in today’s world.

On June 23, 1948, Joseph Stalin of the Soviet Union began a post World War II effort to essentially starve West Berlin into forgoing their democracy so that he could succeed in gaining control of the entire capital city. At midnight, all electric power was cut, and by sun up, all road, rail, and barge traffic was immobilized (Provan, 1999). This bold act did not come without opposition from the Allied Forces who soon responded with an enormous humanitarian effort in what was later known as “The Berlin Airlift.”

RESPONSIVENESS:

Beginning on June 26, 1948, the effort lasted over the course of an eighteen-month period during which Great Britain and the United States supplied those trapped in West Berlin with more than 2.3 million tons of food, fuel and medicine over the course of more than 278,000 cargo missions (Drozdiak, 1998). The endeavor lasted until May of 1949 when the Soviets

finally gave in and reopened land and water routes into Berlin, but the airlift continued through the month of September in order to build a reserve of supplies.

The task was not an easy one by any stretch of the imagination. The effort consisted of twenty-four hour relief, seven days a week, with some days involving drop-offs every thirty seconds. A logistics effort this substantial and this complex was unheard of at the time—there was nothing to even compare it to. To begin with, the United States had recently cut back its military count in Europe, with only about 275 aircraft left in the area (Provan, 1999), less than ten percent of what the Soviet Union maintained. Therefore, the first course of action for the president at the time, Harry Truman, was to simply get troops overseas and into Germany.

In addition, the United States Air Force faced several logistical issues regarding the actual aircraft that were used in the effort. The C-47 cargo planes used by the Air Force were not large enough to effectively provide aid, while the larger C-54s required specific upkeep that was simply difficult to come by at the time. In addition, there was a limited inventory of the aircrafts' components, and because neither aircraft was designed for such long flights, the amount of maintenance was greatly increased. A greater number of mechanics was also therefore necessary to keep up with the influx of work to be done (Air Force Logistics Management Agency, 2009).

COORDINATION:

Upon realization of the absolute severity of the situation at hand, the Air Force appointed an experienced leader, Lieutenant William H. Tunner, to lead the troops. Shortly after taking control, Tunner addressed a wealth of confusion as a result of a severe lack of coordination among his cohorts.

Obviously, given the time period, electronic communication was nonexistent. Paper was used for everything, and because the Airlift presented an entirely new and unique scenario with a

rapid inflow of constant communication, it was essentially impossible for the paperwork to keep up. Supplies were coming in at such a rapid pace that it far surpassed the processing abilities at the time. Not only was there paperwork simply for inflows and outflows from the United States' standpoint, but also was a need for a network of communication between the United States and the other countries, such as the U.K., providing aid as well.

As a result of the Berlin Airlift, the need for a more dynamic and integrated communication system was outwardly apparent. Some argue that the Berlin Airlift was essentially the “catalyst” for the emergence of the EDI (electronic data interchange) system in the 1960s (Drummond Group, 2007).

ANALYSIS:

Given the time period and the circumstances of such a unique situation, the humanitarian relief provided to the citizens of West Berlin was nothing short of extraordinary. The notion of a “supply chain” was virtually nonexistent; those involved simply made the most out of what they had and strategized as best as they could. The typical components of a supply chain process were present, but because such an atypical scenario had never occurred in the past, and because supply chain management (let alone supply chain optimization) was very new, those involved in the aid were faced with essentially being test subjects on a very large stage. However, the supply chain practices of forecasting and procurement naturally fell into place and can be examined in detail when analyzing the above metrics of responsiveness and coordination, as both contribute heavily into a successful supply chain.

Because the circumstances of the situation from a long term perspective were relatively unknown, as the motives and future actions of the Soviet Union were difficult to predict, the United States Air Force needed to forecast demand based on the number of people in need while

taking into account an uncertain forecasting period. In addition, the Air Force had to respond quickly to immediate needs and therefore needed access to an adequate supply in a short period of time. Given the logistical challenges of the time period, what the U.S. Air Force was able to accomplish was nothing short of monumental. Not only were they able to swiftly transport large quantities of aid, but they were able to do it continuously until the job was complete and those in need were relieved.

Chapter 2: Hurricane Katrina

BACKGROUND:

The sixth strongest ever recorded, the third strongest ever to hit the United States, and killing upwards of 1,800 people, Hurricane Katrina will forever be remembered as one of the costliest (in every sense of the word) natural disasters to date, with \$75 billion in estimated damages (Discovery Communications, LLC, 2012).

One unique aspect of the devastation that amplified the ensuing issues was the fact that many, if not most, of the displaced were already living below the poverty line before Katrina wreaked havoc. Furthermore, 2005 was not a good year for the U.S. and the gulf coast in particular, as Katrina was the eleventh storm large enough to warrant a name, fifth hurricane, and second category 5 hurricane of the year to devastate the Atlantic region (Discovery Communications, LLC, 2012).

At its worst, nearly eighty percent of New Orleans was under water, as the levee system in place was flawed and made only to withstand category three hurricane surges. According to National Geographic, the main cause of hurricane-related deaths in the past few decades has been a result of destructive inland flooding, as opposed to storm surges and wind damage (Handwerk, 2005).

RESPONSIVENESS:

In the late morning on Friday, August 26th, 2005, it became clear that Hurricane Katrina was shifting from the panhandle of Florida toward the heart of Louisiana: New Orleans. Within two hours, the governor of Louisiana had declared a state of emergency as the hurricane quickly developed into a category two storm. By 4:00 a.m. that morning, Katrina had become a category three, and by 7:00 a.m. the National Weather Service declared that it could develop into a

“potentially catastrophic category five hurricane,” that could leave the areas it hit “uninhabitable for weeks” (Discovery Communications, LLC, 2012).

On the morning of Saturday August 27th, FEMA began 24-hour operations in Washington D.C. as phased evacuations began in Louisiana. By the afternoon, a state of emergency had been declared specifically for the city of New Orleans and it was determined that the Superdome would be opening at eight the following morning (Sunday the 28th) for emergency shelter purposes. By 7:00 a.m. on Sunday, Katrina had become a category five storm, the highest ranking on the scale. Later that morning, a mandatory evacuation was set into place, with President Bush signing off on a declaration of disaster for the city and stating that the government would “do everything in [its] power to help the people in the communities affected by this storm” (Discovery Communications, LLC, 2012).

In the early hours of Monday the 29th, Katrina began to lose some of its strength, downgrading to a category four storm. However, its sheer size and the fact that it was an incredibly slow moving storm made it still incredibly lethal. By 6:30 a.m., the city’s levees had failed and New Orleans began to flood. As Katrina made a second landfall, President Bush declared a state of emergency in three states: Louisiana, Mississippi, and Alabama.

While the storm downgraded to a category two by Tuesday the 30th, and while the initial response in the area seemed to be on top of things, FEMA representatives soon declared that eighty percent of New Orleans was underwater, leading the governor to literally ask President Bush for “everything he’s got” (Discovery Communications, LLC, 2012). However, on the morning of the 30th, rather than traveling to New Orleans, the secretary of Homeland Security, Michael Chertoff, headed to Atlanta, Georgia for a conference on avian flu. Mississippi Governor, Haley Barbour, who surveyed the region from the air on August 30th, commented that

the scene was akin to that of a nuclear detonation, noting that she would have imagined it was “what Hiroshima looked like sixty years ago” (Townsend, 2006). By this point in time, the Governor of Louisiana expressed concern regarding the extent of the storm’s devastation, especially in conjunction with the state’s limited resources. The next day, FEMA stepped up with an order of 455 buses to be sent down for an immediate evacuation, but this would take time, as is true with any ground transportation, and in this case the first buses would not arrive for another twenty-four hours.

On Wednesday, August 31st, four days after the storm first hit, President Bush witnessed the devastation for the first time as he flew over the scene aboard Air Force One. Quotes made by both the President and the secretary of Homeland Security further illustrated the lack of severity known, as Bush stated that he did not think anyone had anticipated the levees breaking, and Chertoff claimed he “had not heard a report of thousands of people in the convention center who don’t have food and water” (Discovery Communications, LLC, 2012). On the night of September 1st, the mayor of New Orleans could no longer hold in her frustrations, and subsequently blasted the relief efforts to a local radio station.

By this point in time, many believed that the federal government’s response to the catastrophe was severely lacking, and that President Bush was blind to the severity of the situation. On September 2nd, Bush finally made a visit to the Gulf Coast, and to further illustrate his ignorance, he was given an on-flight DVD by special counselor, Dan Bartlett, who thought that Bush needed to be “abreast of the situation” (Discovery Communications, LLC, 2012). On September 3rd, a week after the storm broke land, President Bush ordered 7,200 troops to the Gulf Coast, and both the Superdome and Convention Center were finally evacuated.

COORDINATION:

A congressional report titled “Failure of Initiative,” issued in the aftermath of the disaster argues that the government’s response to Katrina displayed a “failure of leadership.” The report detailed failures among government agencies to share information crucial to proper disaster response, which inevitably lead to a lack of responsibility, widespread confusion, and ignorance of those in drastic need. The report stated that the response to Katrina was “an abdication of the most solemn obligation to provide for the common welfare,” and that failures occurred “at every level—individual, corporate, governmental—we failed to meet the challenge that was Katrina. In this cautionary tale, all the little pigs built houses of straw” (CNN, 2006). This metaphor speaks volumes and is perhaps the most accurate analogy of a catastrophe that many argue had long been foreseen and therefore should have included a more adequate and prepared response.

A report from the Department of Homeland Security described the communication network as “non-existent.” With the hurricane damaging or completely destroying hospitals, many of those in the most dire need were left in flooded facilities (or no facilities at all), and evacuation plans were simply inadequate. Furthermore, reports from all sources were conflicting, unclear, and in some cases entirely inaccurate, leaving those actually committed to the aid effort with tied hands and clouded vision. Emergency response operations were incapable of operating effectively and radio services were not functioning. Robert Barham, a Louisiana Senator and chairman of the State Senate’s homeland security committee, was quoted as saying, “People could not communicate. It got to the point that people were literally writing messages on paper, putting them in bottles, and dropping them from helicopters to other people on the ground (Townsend, 2006).

Communications systems lacked structure at all levels, from the ground up. Not only was a lack of leadership apparent, but different equipment was used across the board--the National

Guard, active duty military, and emergency response teams all had their own systems and equipment. This therefore led to inflexible communication that was not at all transparent. A strategy for operability and interoperability was non-existent. Ease and efficiency of communication is an absolutely essential component of effective coordination, and this was clearly lacking on all fronts in the wake of Hurricane Katrina.

A final miscue in the coordination of aid during Katrina was the fact that FEMA was unprepared and unable to efficiently accept and manage aid and funds that were willingly offered up by other countries. Therefore, helpful resources were often unused, not only frustrating those in need of them, but also the donors whose hands were tied. This was yet another example of deficient planning that led to slow moving processes and frustration across the board. A more efficient system would enable a much smoother implementation process and would put foreign aid to better use.

ANALYSIS:

One of the main issues with Hurricane Katrina was the inability of the response efforts to keep up with the rate of consumption of the aid provided. Ultimately, those involved (most notably, FEMA) were simply at capacity in terms of logistical capabilities. William Carwile, the FCO for Mississippi, recalled that there was a huge gap “between what we required on the ground and what they were sending us” (Townsend, 2006). Communication issues plagued FEMA as well as other federal departments/agencies which inevitably led to a lack of effective resource distribution and response operations.

According to the head of the Logistics Branch of FEMA, Edward Delisso, there were two main issues in the Katrina story. The first was the *scope* of the problem. The disaster simply exceeded the capacity of all of the players involved. FEMA, for instance, is an inherently limited

agency, as they do not actually *own* anything and cannot tell local governments what they should or should not be doing. Contrary to popular belief, FEMA itself is actually a very small entity with only six distribution centers (four in the continental U.S., two in the surrounding territories) that contain only a small amount of “emergency response resources,” or “life saving goods.” In essence, FEMA’s capabilities are only the tip of the iceberg and they rely on local jurisdictions to provide the chunk of the necessary resources. The second issue regarding Katrina was *money*. Many of the affected expected the government to swoop in and save the day, and while it is evident that the government could have and should have done more (and at a much faster pace), there are certain things that slowed the process and prohibited FEMA from being able to provide the aid that the victims expected. First and foremost, FEMA cannot simply jump into a situation and override a local government’s responsibilities. A state emergency must be declared before a state government can begin spending its money on relief, and local governments have to essentially ask FEMA and the Federal Government for help, and award them permission to get involved, before any real efforts can begin (Delissio, 2012).

Perhaps an effective method of improving communication would be a nation-wide emergency communication strategy that would promote not just operability of communications, but also interoperability—an imperative component of coordination. Not only would this enable more information sharing and logistical transparency, but it would also promote more effective allocation of resources and transportation of aid. As is evident in the Katrina story, communication is at the heart of a successful relief effort.

Chapter 3: Haiti

BACKGROUND:

Aftershocks often resonate through a devastated area in the days following a major earthquake. These mini-quakes shake the land yet again in a physical manner. For the citizens of Haiti, however, the notion of an “aftershock” has evolved into something far beyond the literal mini-quakes.

On January 12, 2010, roughly ten miles away from the capital city of Port-au-Prince, a magnitude 7.0 earthquake struck Haiti from an epicenter located ten miles southwest of the capital, Port-au-Prince. An estimated 3.5 million were affected by the quake, with roughly 230,000 deaths, and two million displaced from their homes (ReliefWeb, 2011).

This kind of devastation would be bad enough in a more developed area, but in Haiti (a country that ranks 145th out of 169 countries in the UN Human Development Index—the lowest in the Western Hemisphere) where more than seventy percent of the population was living on less than two U.S. dollars a day and where eighty-six percent of those living in the capital city were living in slum conditions, the destruction of an earthquake had much larger consequences.

RESPONSIVENESS:

Shortly after disaster struck, the U.S. government responded immediately, led by Secretary of State, Hillary Clinton, and perhaps Haiti’s staunchest advocate, her husband and former president, Bill Clinton. In the days that followed the earthquake, the federal government deployed thousands of medical professionals to aid those in need. Teams of doctors, nurses, paramedics, surgeons, and emergency medical technicians, as well as roughly 22,000 pounds of medical supplies, were on their way to Haiti within days (O’Keefe, 2010).

The U.S. Coast Guard quickly became active, with helicopters flying over Haiti immediately after the disaster to determine the location and extent of the damage and evacuations of American citizens in the area. In addition, the U.S. military quickly began a twenty-four hour per day airlift of water and medicine and *Comfort*, the U.S. Navy's hospital ship deployed for Haiti as well (O'Keefe, 2010).

However, the rapid influx of aid almost became an issue itself, as it began to outpace the country's ability to adapt and absorb it. According to an article in Rolling Stone magazine, only a fraction of the money devoted to the relief efforts has actually been spent (Reitman, 2011). A member of Congress, Rep. Barbara Lee, stated that the relief efforts had proved to be "sluggish, at best," and stressed that there was a "lack of urgency on the part of the international community" (Reitman, 2011). Her point is difficult to argue given the fact that even now, two years after the earthquake, the devastation in the area and the amount of refugees still suffering has yet to reach a level where it can no longer be described as enormous.

COORDINATION:

The main reason for the response issues that arose during the relief efforts were very much attributed to a lack of coordination and communication. As Rajiv Shah (director of USAID), put it in an interview with Rolling Stone magazine, "If you look at the response from early January to the middle of March, it all came together in a pretty coordinated way, given the challenges" (Reitman, 2011). It was the lack of coordination that followed that proved to be the real issue. Many of the NGOs and aid groups that arrived in Haiti had little knowledge of the environment and local government and many worked according to their own agendas, rather than as one unified force.

Aid groups proved to be intensely disorganized and dysfunctional, while a lack of strong leadership in the country left the Haitian government overwhelmed. What some aid groups failed to understand was the fact that many Haitian ministers were motivated not by the thought of helping others, but rather by a “what’s in it for me?” mentality. In addition, the elite ruling class in Haiti (essentially the controllers of the country’s wealth, and also the owners of the land being used to house many of the refugees) held major clout in the political realm. Haitian officials were facing an upcoming election at the time and were wary to go against the wishes of their largest benefactors for fear of losing power (Reitman, 2011).

Because of this, most of the foreign aid was instead directed toward NGOs and other trusted groups. While this may have been a more favorable option, it did not combat the fact that these groups, despite having previous experience working in similar situations, were obviously not experts in reconstructing an entire nation. As John Simon (former U.S. ambassador to the African Union and an undersecretary to at USAID during the Bush years) emphasized, there are certain things that are essential components of successful relief during a disaster: establish a clear chain of command and establish a “gatekeeper function” to get those who do not know what they are doing out of the way. Simon suggested that what unfortunately seemed to be present in Haiti was “a lot of new people who were not in the business of disaster relief and who took this as an opportunity to learn” (Reitman, 2011). While being thrown into the fire and learning on the job are often effective methods of education, disaster relief is not a situation where such a method should be practiced, as stakes are high and human lives are on the line.

In addition, turnover rates among “rotating short-term ‘surge’ groups made coordination and stability an even bigger challenge. Continuous waves of incoming volunteers for short terms

were not conducive methods to long-term solutions. In such a unique, high-stakes situation, a deep understanding of the problems at hand and the best ways of handling them are necessary.

Another area in which the efforts were lacking was in overall capacity. Emergency Relief Coordinator John Holmes expressed frustration in an e-mail leaked to the media saying that the “lack of capacity has meant that several clusters have yet to establish a concise overview of needs and develop coherent response plans, strategies and gap analyses. This is beginning to show and is leading others to doubt our ability to deliver,” (Reitman, 2011). Logistics, in general, proved to be an enormous bottleneck in this humanitarian operation, as has been true in many others. For instance, both the airport and the port were quickly operating beyond capacity and were therefore unable to function efficiently. Furthermore, in a country as underdeveloped as Haiti, issues such as infrastructure, offloading, access to fuel, storage, and the need for military escorts create even more challenges. Additionally, nearly all systems involved were becoming clogged with the rapid influx of goods coming into the country and warehouse shelves were stocked with goods that were not immediately necessary, which therefore left little space for critical, in-demand goods (Rencoret, et al, 2010).

ANALYSIS:

A USAID expert, Bill Vastine, expressed frustrations with the handling of the situation in terms of misuse (and in some cases complete lack of use) of historical data regarding Haiti. According to Vastine, surveys of the area had been done on a regular basis for roughly fifty years, and a large amount of time and money could have been saved “if the State Department had opened their frickin’ (sic) filing cabinets,” (Reitman, 2011). Vastine stressed that the amount of information on Haiti was immense, and the fact was that companies were continuously hired for millions of dollars to come in and collect data that was already in storage. According to Vastine,

“Haiti doesn’t need any more Ph.D.s to study it. What it needs are some professionals who know what they’re doing to go out and goddamn (sic) work and rebuild it,” (Reitman, 2011). As is evident in Vastine’s sentiments, there are a lot of strong opinions regarding the handling of the disaster and the lack of communication and coordination involved in the relief efforts.

While the relief efforts have provided significant support on the road to recovery, the need for long-term sustainable solutions is no easy task. The challenge lies in the continuous need for things such as a stable infrastructure, energy efficiency, economic security, and governance. Together with the Haitian people, the Government of Haiti, and the international community, USAID and the U.S. Government are continuing to help to build a stable and economically viable Haiti.

Chapter 4: Japan Tsunami

BACKGROUND:

An earthquake in itself is detrimental. An earthquake powerful enough to generate a massive tsunami is even worse. The resulting destruction from a lethal combination of natural catastrophes is almost unthinkable. This is precisely what happened in Japan on March 11, 2011. First, an 8.9 magnitude quake (one of the largest in recorded history) shook the eastern coast of the country. The resulting rupture in the earth's crust was roughly 180 miles long and the island of Honshu actually moved 2.4 meters (roughly eight feet). Soon after, tsunami waves hit the coast of Hawaii, causing an outburst of emergency response. To put the power of the quake in perspective, a tsunami is the result of a force powerful and violent enough to move the ocean floor enough to cause a rapid and massive displacement of water in the form of a "wave train." Even for a country familiar to earthquakes, this disaster was of catastrophic proportions never before seen, looking more like an apocalyptic film than real life.

The first waves of a tsunami are typically not the most powerful, and this was evident in 2011, as the waves that hit Hawaii were only a precursor of the devastation yet to come (National Geographic News, 2011). It is estimated that the Japanese coastal residents had a mere eight to ten minutes of warning before the imminent waves struck land. Furthermore, aftershocks of the quake rocked the city for the following days, with some of magnitudes hovering around seven, the same as the powerful quake that hit Haiti back in 2010. In addition to the earthquake and ensuing tsunami, the threat of a nuclear disaster loomed as reactors were not adequately protected. And to top off this devastation, this disaster struck in the dead of winter—and was followed by a snow storm that only added to the difficulties and challenges faced by the Japanese people and those attempting to aid them.

RESPONSIVENESS:

Some may argue that one of the main reasons why the disaster in Japan was not only so costly, but also so deadly, was because the Japanese people were perhaps slightly ignorant to the threat of a real tsunami. A country well-trained in earthquake response, Japan was used to tsunami warnings that warranted little or no waves. Therefore, when the warnings were right, a tsunami of near epic proportions left the city in pure devastation and the Japanese people were unable to respond on their own.

Within a week after the disaster struck the U.S. Army, Navy, Marines, and Air Force were all present in the area with response teams at the ready. In addition, with the prospect of a nuclear disaster, the U.S. military began aerial surveillance of damaged plants. While seawalls were in place, they were nowhere near strong enough, and in a place where there should have been a serious investment in a powerful wall (around the nuclear reactors), there was simply not enough protection and not enough time to react.

Because of the lack of preparation, the Japanese government was almost stuck in a state of shock immediately following the disaster, which inevitably permeated the mounting issues and caused a bit of an outrage among the country's citizens, who were desperately seeking the kind of governmental response they had grown accustomed to when faced with challenges in the past.

Japan has since invested a bold thirteen trillion yen (roughly 167 billion U.S. dollars) over the next five years in a reconstruction program with the hopes of speeding up the return of business and reigniting the economy. However, little has been done to aid in the emotional devastation still prominent to the Japanese people, and this will most likely prove to be a key factor needing attention in order for the nation to truly recover.

COORDINATION:

The main issue preventing effective coordination in the response to the disaster in Japan was the clear lack of preparation, which resulted in severe power outages and confusion as citizens scrambled to attain higher ground in the wake of the tsunami without any clear knowledge of what was going on and what was being done. Since the event, commentators have not hesitated to criticize Japan's lack of preparation and failure to adequately evaluate potential risks of ensuing disasters. The fact that the tsunami knocked out something as significant as a nuclear power plant, something that should have warranted the most protection as possible, is the most telling anecdote of all.

The damage to the plant led to a radiation leak, which added a new layer of complexity to the evacuation process. Because radiation poisoning is lasting, evacuations were necessary even after the physical devastation had subsided. Survivors were still forced to leave, often times without full information as to why or how severe the ensuing situation was.

In addition to the transportation of goods into the country, the situation in Japan also called for transportation of dependents from Honshu, Japan's mainland, back to the United States—which warranted an even more complex system of coordination. Shortly after the disaster, the Defense Department announced that dependents (at the time there were roughly 40,000 in the country) would be flown back on a voluntary basis. At the helm of this effort was Air Force Major, Tom Esser, who led the coordination of departing military family members from the Misawa Air Base. Many families, especially those with young or even newborn children, found leaving to be the only option, as things such as baby formula were simply nowhere to be found (Beaubien, 2011).

While numerous international aid teams arrived in the country soon after the disaster struck, the threat of radiation caused many to leave shortly after entering. For example, a medical team from Germany turned around and left after a mere twenty-four hours in the country. China and the U.S. aided in small ways as well, but perhaps due to a lack of information and communication with the Japanese government, aid efforts were miniscule in comparison to the devastation in the area. Furthermore, because of the difficulties that arose due to lack of road travel, those involved in the relief efforts were forced to rely on sea and air efforts to assist those in need, which require much higher levels of coordination.

ANALYSIS:

A unique element present in the Japan story is the fact that the Japanese people generally expect their government, that of a prospering nation, to work. The prospect of millions of people going days without necessities such as gasoline and electricity simply was not on their radar. Moreover, the notion of the government being woefully unprepared and unable to respond left the Japanese people unsettled to say the least (Higgins, 2011).

Furthermore, according to a *New York Times* article by Steven Lohr written shortly after the devastation, the disaster presented a “first-of-its-kind challenge.” Japan, one of the most prominent suppliers in the automobile industry, presented the supply chain with a whole new beast. With plants forced to close for days on end, the “ripple effects” inevitably resonated throughout the globe. General Motors, for instance, was forced to shut down certain plants temporarily due to a lack of made-in-Japan parts (Lohr, 2011).

In an interview with the Huffington Post, Eileen Decker, the deputy mayor for Public Safety in Los Angeles, stressed the need for better preparedness in situations like the one faced by Japan. She emphasized that during a disaster, first responders and utilities are stretched to

capacity, and while these people are well-trained and hard-working, there is only so much they can do at once: “We have to help them. We can't just wait for them to come. We have to have those first aid kits. We have to have first aid training. We must have water to take care of ourselves while they deal with the catastrophe at hand and try to bring us all back to normal operations,” (Kurtenbach, 2012).

Chapter 5: Conclusion

It is evident that progress has been made in the arena of humanitarian relief, and that a dedicated force is working hard to monitor this progress and continuing to make improvements. However, along with this notion, it is also evident that the complexity and length of supply chains are ever-increasing, and the evolution of a global supply chain presents continuously growing challenges. Furthermore, these types of events present the highest possible stakes, and therefore require astute responses.

The Steven Lohr *New York Times* article referenced above likened modern global supply chains to “complex biological systems like the human body,” arguing that they can be remarkably resilient and self-healing, yet at times quite vulnerable to some specific, seemingly small weakness—as if a tiny tear in a crucial artery were to cause someone to suffer heart failure” (Lohr, 2011).

There are essentially three phases to a humanitarian relief effort: mitigation and preparedness (pre-disaster), response (amid disaster), and recovery (post-disaster). As past events have demonstrated, the pre-disaster phase is perhaps the most crucial, as it essentially sets the stage for the remaining phases. Without proper mitigation, a sufficient response and recovery are far more difficult to achieve. Disruptions to the supply chain are inevitable, and disasters are inevitable. The key is to avoid the disruptions and disasters. Proper contingency planning and the identification of high risk areas are imperative. Critical regions should develop and maintain a framework for recognizing and managing risks associated with unavoidable events.

One major issue when examining humanitarian aid is the fact that disaster response groups hire doctors and the like to take care not only of the medical aspects, but also those where supply chain oriented minds are needed. This, therefore, results in large amounts of wasted time

and money, as well as clogged processes. These disruptions contain the highest possible stakes and therefore require the coordination and cooperation of experts in their respective fields.

In addition to clogged processes, supply chains have become physically clogged as well, as was true in both Haiti and Katrina. When Haiti needed clean water, they were bogged down with stuffed animals. When Katrina needed medicine, they were stuck with blankets. A lack of communication is largely to blame for this, as well as defective coordination strategies among all parties involved, from the victims all the way up to the heads of state. A severe lack of preparedness is wholly evident in each of the analyzed cases, and was a detrimental factor in the ensuing lack of response efficiency and coordination.

As is true when a company faces a disruption, humanitarian agencies and local governments can also practice similar strategies to combat the negative effects. Strategies such as maintaining safety inventory for critical supplies and having multiple suppliers can help offset the impacts of a disaster. While it is true that holding inventory can be costly, it is important to develop a balance between these holding costs and the potential benefits in terms of risk management. In cases where the cost of holding inventory is greater than the risk aversion, having multiple suppliers at the ready can be beneficial instead, particularly when high-volumes are necessary. However, it must also be taken into account that transportation is often an issue during a disaster and this may not be the best approach for resources that may be more urgent (Chopra, 2004).

“Stress Testing,” or carrying out “what if” scenarios, can be an effective method of preparing for a disruption accordingly. In doing so, key suppliers, shipping lanes, capacities, and the like can be identified in the wake of an unforeseen event (Chopra, 2004). However, according to Edward Delissio, this is no easy task. FEMA does practice what is termed “All

Hazards Planning,” which applies to both man-made and natural disruptions, but this is especially difficult from a logistics standpoint, as the costs of simulating a disaster and the ensuing movement of goods is simply too high, and such events are simply too unique to generalize in a simulation. Therefore, FEMA’s logistics branch tends to focus on “table top” scenarios where capabilities are analyzed (Delissio, 2012). These practices illustrate that necessary planning is present in some areas, but this is not enough. As previously stated, FEMA is limited in its abilities to aid, and therefore it would be prudent for local governments (especially in high risk regions) to perform similar analyses and exercises to prepare for unforeseen events.

According to an article in *Supply Chain Management Review*, there are four key steps associated with developing a risk management program for a company—and the same steps can be applied to humanitarian agencies and local governments. Step one emphasizes “securing support from senior leadership.” While this is referring to chairmen and CEOs, it can also be applied to agency leaders and politicians. Step two advises starting with “basic business continuity planning” programs to build a foundation. This can be directly applied to humanitarian logistics. Step three states the importance of “coordination, playbooks, and trigger planning,” as well as cross-functionality and continuously updated timelines. Again, this can easily be applied to humanitarian aid efforts, and these factors are of utmost importance in both arenas. Finally, step four emphasizes the “development of clearly understood and accepted priorities to facilitate decision making and action prioritization” (Harrington, 2009). The fourth and final step is the most profound and appropriate for this analysis. A clear understanding and open communication across the board, as well as continuous transparency throughout the supply

chain will promote efficient relief efforts, especially along the metrics of responsiveness and coordination.

The evolution of humanitarian/disaster relief supply chains illustrates not only the logistical difficulties that come with the territory, but also the areas needing improvement and the opportunities that remain. The Berlin Airlift exemplifies an effort that far exceeded its time. It shows that in times of need, the supply chain is capable of going beyond itself and stepping up to the call of duty, and improvising in the face of harsh logistical obstacles. The world events that have occurred since then, however, have exposed weaknesses in the infrastructure of the supply chain. Similarly, they have also shown that there is a wealth of opportunity in terms of improvement. The disasters that struck Haiti, the southeast U.S., and Japan have provided the best logistical minds with the necessary data to work with in order to grasp what works and what does not to generate more adequate relief efforts in the future.

WORKS CITED:

- Air Force Logistics Management Agency. *Thinking About Logistics*. Gunter Annex, Alabama: Air Force Logistics Management Agency, 2009. 155-168. Print.
- Beaubien, Jason. "Japan Relief Efforts Centered At U.S. Military Bases." *NPR*. N.p., 20 Mar. 2011. Web. 2 Apr. 2012.
<<http://www.npr.org/2011/03/20/134699706/japan-relief-efforts-centered-at-u-s-military-bases>>.
- Chopra, Sunil, and ManMohan S Sodhi. "Managing Risk To Avoid Supply Chain Breakdown." *MIT Sloan Management Review* (Fall 2004): n. pag. Rpt. in *HBS Publishing*. N.p.: Massachusetts Institute of Technology, n.d. N. pag. Print.
- CNN. "Report: Katrina response a 'failure of leadership.'" *CNN: Cable News Network* 14 Feb. 2006: n. pag. *CNN Politics*. Web. 30 Mar. 2012.
<http://articles.cnn.com/2006-02-13/politics/katrina.congress_1_katrina-response-national-emergency-management-association-homeland-security?_s=PM:POLITICS>.
- Delissio, Edward. Personal interview. 26 Mar. 2012.
- Discovery Communications, LLC. "Surviving Katrina: Facts About Katrina." *Discovery Channel*. N.p., 2012. Web. 13 Jan. 2012.
<<http://dsc.discovery.com/convergence/katrina/facts/facts.html>>.
- Drozdiak, William, and Associated Press. "The Anniversary of an Airlift/Fifty Years Have Passed Since the West Began Bringing Cagoes With Care to Besieged Berlin." *The Philadelphia Inquirer* 17 May 1998: n. pag. *LexisNexis Academic*. Web. 6 Jan. 2012.
<<http://www.lexisnexis.com.ezaccess.libraries.psu.edu/hottopics/lnacademic/>>.
- Drummond, Rik, and Beth Morrow. "Lessons Learned from the History of Interoperable B2B Communication." *The Drummond Group Inc*. N.p., 2007. Web. 6 Jan. 2012.
<http://www.drummondgroup.com/pdfs/Lessons_Learned_vFinal_2007.pdf>.
- Handwerk, Brian, and National Geographic News. "Eye on the Storm: Hurricane Katrina Fast Facts." *National Geographic*. N.p., 6 Sept. 2005. Web. 13 Jan. 2012.
<http://news.nationalgeographic.com/news/2005/09/0906_050906_katrina_facts.html>.
- Harrington, Kevin, and John O'Connor. "How Cisco Succeeds At Global Risk Management." *Supply Chain Management Review* (July-Aug. 2009): n. pag. Print.
- Higgins, Andrew. "Japan's slow tsunami response stirs anger." *The Washington Post* 16 Mar. 2011: n. pag. *The Washington Post*. Web. 2 Apr. 2012.
<http://www.washingtonpost.com/business/economy/nikkei-recovers-57percent-us-stock-futures-fluctuate-over-nuclear-crisis/2011/03/16/ABQd0sg_story.html>.

- Kurtenbach, Elaine. "Japan Tsunami Could Happen Again If Powerful Earthquake Hits: Experts." *Huffington Post*. N.p., 1 Apr. 2012. Web. 2 Apr. 2012.
<http://www.huffingtonpost.com/2012/04/01/japan-tsunami-earthquake_n_1394593.html>.
- Lohr, Steve. "Stress Test for the Global Supply Chain." *The New York Times* 19 Mar. 2011: n. pag. Print.
- National Geographic News. "Tsunami Facts in Wake of Japan Earthquake." *National Geographic*. N.p., 11 Mar. 2011. Web. 2 Apr. 2012.
<<http://news.nationalgeographic.com/news/2011/03/110311-tsunami-facts-japan-earthquake-hawaii/>>.
- O'Keefe, Ed. "The government's response to Haiti earthquake." *The Washington Post* 14 Jan. 2010: n. pag. *The Washington Post*. Web. 1 Apr. 2012.
<http://voices.washingtonpost.com/federaleye/2010/01/the_governments_response_to_ha_1.html>.
- Provan, John. "The Berlin Airlift: The Largest Humanitarian Airlift in HIstory." The George W. Jalonick III and Dorothy Cockrell Jalonick Memorial Distinguished Lecture. University of Texas at Dallas. 18 Sept. 1999. *LexisNexis Academic*. Web. 6 Jan. 2012.
<<http://www.utdallas.edu/library/collections/speccoll/jalonick/jal99.pdf>>.
- Reitman, Janet. "Beyond Relief." *Rolling Stone* 18 Aug. 2011: 60-71. Print.
- ReliefWeb. "Haiti Earthquake Facts and Figures ." *ReliefWeb*. N.p., 5 Jan. 2011. Web. 30 Mar. 2012.
<<http://reliefweb.int/node/380897>>.
- Rencoret, Nicole, et al. *Haiti Earthquake Response: Context Analysis*. N.p., July 2010. Web. 2 Apr. 2012.
<<http://www.alnap.org/pool/files/haiti-context-analysis-final.pdf>>.
- Townsend, Frances Fragos. *The Federal Response to Hurricane Katrina: Lessons Learned*. N.p., 23 Feb. 2006. Web. 1 Apr. 2012.
<<http://library.stmarytx.edu/acadlib/edocs/katrinawh.pdf>>.

Tara E. Branigan

911 Teaberry Lane • State College, PA • 16803 • teb5081@psu.edu • 814-360-7952

EDUCATION

THE PENNSYLVANIA STATE UNIVERSITY, University Park, PA
Schreyer Honors College

Expected May 2012

B.S. in Supply Chain in the Smeal College of Business

- Minor in International Business
- Dean's List Every Semester

PALAZZO RUCCELAI, Florence, Italy

Summer, 2010

- Studied international business with the intention of obtaining an IB minor
- Gained a global awareness and perspective while traveling in Europe, as well as a greater independence

PROFESSIONAL EXPERIENCE

H.J. Heinz, Pittsburgh, PA

Summer, 2011

Supply Chain Internship—Ingredient Procurement

- Maintained open communication networks and negotiated contracts with suppliers
- Supported buyers in the sugar/sweetener and dairy categories
- Contributed to a cross-functional team and worked closely with other departments to help determine the most efficient and cost-effective course of action in ingredient procurement.
- Won the end of term “intern challenge” by preparing a detailed “cost-savings” presentation for upper-management that would save the company ~86K this fiscal year.
-

The Pennsylvania State University, University Park, PA
Volunteer Sports Marketing Intern

December 2009-March 2010

- Worked with Penn State Sports Marketing and Promotions Manager, Jeff Fisher
- Aided in marketing and promotions at various Penn State sporting events, primarily women's basketball

LEADERSHIP

State College Area High School, State College, PA
Varsity Girls' Basketball

2004-2008

- Three-year starting point guard (captain--senior year) at the Varsity level while in school
- Participated in various events and fundraisers to market the team and raise money

Varsity Girls' Basketball Camp, State College, PA

2004-2008

- Camp counselor and coach during week-long summer camps
- Developed leadership and teaching skills as well as team building/motivation

SKILLS SUMMARY

Business Software Programs: BPCS, Viper, Cognos

Additional Software Programs: Microsoft Office (Word, Excel, Powerpoint), Internet Explorer, Firefox, MS Outlook