Fourth-Party Humanitarian Logistics

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1. Research interest

2. ANP method and results

3. Fourth-party humanitarian logistics

4. DHL – HumLog examples

5. Conclusion
1. Research interest

- 385 natural disasters without the consequences such as diseases and epidemics
  - hit 131 countries worldwide,
  - affected 217 million people,
  - killed 297 thousand people,
  - caused US$ 123.9 billion of damages in 2010
The topic humanitarian logistics and the coordination as well as cooperation becomes significant.

Problems in such natural disasters are various:
- Destructed information and communication network systems,
- Limited access to roads,
- Destroyed infrastructure and the equipment to remove destroyed buildings,
- Trained local officials as well as volunteers are not available.

For overcoming the vulnerability and impacts due to natural disasters an effective humanitarian logistics has to be implemented.

Fourth-party logistics: transparency, process re-engineering, innovator, strategy development and improved management of resources.
2. ANP method and results

- Extension of analytical hierarchy process
- Multi Criteria Decision Making (MCDM) method for complicated and unstructured problems
- Solve multiple qualitative and quantitative criteria problems in a network process

- allows groups or individuals to deal with the interconnections (dependence and feedback) between factors of complex structure in decision making process
### 2. ANP method and results

- **Pair-wise comparison of the criteria based on a fundamental scale**
- **Convert individuals' preferences into ratio scale weights**
- **Fulfillment of 4 axioms**
  - Reciprocal condition
  - Homogeneity
  - Dependence
  - Integrity

<table>
<thead>
<tr>
<th>#</th>
<th>Importance Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Equal Importance</td>
<td>Two activities contribute equally to the objective</td>
</tr>
<tr>
<td>2</td>
<td>Weak Importance</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Moderate Importance</td>
<td>Experience and judgment slightly favor one activity over another</td>
</tr>
<tr>
<td>4</td>
<td>Moderate plus</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Strong Importance</td>
<td>Experience and judgment strongly favor one activity over another</td>
</tr>
<tr>
<td>6</td>
<td>Strong plus</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Very Strong or demonstrated Importance</td>
<td>An activity is favored very strongly over another; its dominance is demonstrated in practice</td>
</tr>
<tr>
<td>8</td>
<td>Very, very strong Importance</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Extreme Importance</td>
<td>The evidence favoring one activity over another is of the highest possible order of affirmation</td>
</tr>
</tbody>
</table>
Reciprocal condition: Given two alternatives or criteria $i$ and $j$ from a finite amount of elements. The intensity of preference $i$ over $j$ must be reciprocal to $j$ over $i$.

$$a_{ij} = \frac{1}{a_{ji}} \quad \text{for all } i, j \in A$$

Homogeneity: When two alternatives $i, j \in A$ are compared with regard to criteria $i, j \in A$ one alternative cannot be infinitely better than the other one.

$$a_{ij} \neq \infty \quad \text{for all } i, j \in A$$

Dependence: All elements in a hierarchy are allocated to different levels. A level influences and is influenced only by the next higher or lower level. The elements within a level must not influence each other.

Integrity: The hierarchy contains all relevant criteria and alternatives. When adding or leaving out criteria or alternatives the hierarchy and thus the result might change.
2. ANP method and results

Decision criteria for ANP simulation

- **Goal**
  - Relationship
  - Operational activities
  - Financial performance

- **Cluster**
  - Green logistics
  - Performance measurement tool
  - Information management
  - IT capacity and compatibility
  - Experience in 4PL
  - Experience in HumLog
  - Network
  - Geographical location
  - Quality management
  - Delivery
  - Small damage quote
  - Market share
  - Flexibility in billing and payment
  - Insurance management

- **Alternatives**
  - Cost
  - Quality
  - Reputation
2. ANP method and results

- The most important criterion:
  - Quality in:
    - delivery,
    - IT service,
    - performance,
    - flexibility,
    - warehouse,
    - transportation,
    - project management,
    - location,
    - experience,
    - Innovation,
    - customer service.

- The raw values are directly adapted from the super matrix.
- The ideal values are the raw values multiplied by the cluster weight.
- The normal values are obtained by normalizing ideal values as to sum up to 1.
2. ANP method and results

Decision criteria to outsource logistics activities to 4 PL providers

- Value added service
- Financial performance
- Green logistics
- Long-term relationship
- Information and technology capability and...
- Flexibility in billing and payment
- Performance measurement
- Cost of services
- Information sharing
- Logistics coordination
- Geographical location (coverage)
- Flexibility in delivery
- Quality of services
3. Fourth-party humanitarian log.

Humanitarian supply chain design

Preparedness

Needed supply: storage of standardized supply
Procurement sources: local

Response

Needed supply: food, non-food, medicine, blankets, tents, clothes, fuel, sanitation
Procurement sources: international

Recovery

Needed supply: different goods dependent on disaster type
Procurement sources: local and international

Reconstruction

Needed supply: different goods dependent on disaster type
Procurement sources: local and international

Disaster

Logistics volume/urgency

sudden onset
several months
1 to 5 days
3 months to 1 years

slow onset
several months
2 to 6 months
1 year to several years

time

resources

Preparedness

Response

Recovery

Reconstruction

Humanitarian supply chain management

sudden onset

slow onset
3. Fourth-party humanitarian log.

**Principles of 4th PHL:**

- Transparency
- Accountability
- Result-oriented approach
- Responsibility
- Information sharing
- Goal congruence
- Decision synchronization
- Incentive alignment
- Resource sharing
- Collaborative communication
4. Corporate structure

Deutsche Post DHL covers all logistical services

Deutsche Post

MAIL

EXPRESS

GLOBAL FORWARDING, FREIGHT

SUPPLY CHAIN
4. Core Logistics Services in DHL Aid & Relief

DHL Aid & Relief offers commercial humanitarian 4th party logistics

- Air Freight
- Ocean Freight (LCL & FCL)
- Aircraft Chartering
- Road / Rail Freight
- Warehousing
- Customs Clearing
- Air Express Courier
- Project Logistics

LETS MAKE A DIFFERENCE TOGETHER
4. DHL - Aid & Relief Services (ARS)

DHL Aid & Relief services uses the logistical know-how of DHL worldwide

- Using the **scope and resources** of DHL to deliver aid around the world
- Dedicated, **experienced staff** located in strategic points globally
- Flexible end to end **humanitarian supply chain** solutions
- **Long term** commitment and investment to the industry
- **Global** market presence and expertise in critical locations
GoHelp offers pro bono humanitarian assistance as part of DPDHL’s corporate responsibility strategy.

GARD (Get Airports Ready for Disaster)

DRT (DHL Disaster Response Teams)

WHEO (We Help Each Other)
4. DRT “Disaster Response Teams”

Disaster Response: Managing airport logistics after natural disasters with our Disaster Response Teams (DRT)

- Strategic partnership with the UN Office for the Coordination of Humanitarian Affairs (UN OCHA) since 2005

- Mission: Professional logistics support at airport near to the disaster-affected area to ensure speedy, efficient supply chain and prevent bottlenecks

- Over 400 specially trained DHL employee volunteers in three regions are ready to be deployed within 72 hours – anytime, anywhere
4. DRT Deployments - examples

- Tropical Cyclone, Myanmar 2008
- Typhoon Ketsana, Philippines 2009
- Earthquake, Indonesia 2009
- Floods, Pakistan 2010
- Earthquake, Haiti 2010
4. GARD – Get Airports Ready for Disaster

Building on our DRT experience and in order to increase the surge capacity of airports we established GARD

“Get Airports Ready for Disaster” ...

- is designed specifically for airports located in disaster hot-spot areas
- guides local communities in identifying surge capacity gaps as part of their disaster response mechanisms
- provides professional trainers from DHL Aviation to hold the training
- is an hands-on approach to disaster preparedness mixing classroom elements and on-site assessment work
- yields an Airport Surge Capacity Assessment Report, a tool to understand the surge capacity of an airport for disaster relief operations
5. Conclusion

- Asset / cost efficiencies / profit stability / growth
  - Product goes to beneficiaries but money comes from donors
  - Unpredictable demand and non-profit objective

- Customer service improvements
  - To identify and establish dependable sources of supply

- 4th PHL requires innovative logistics systems
  - The nature of 4th PHL changes from preparedness to response to recovery
  - Difficult operational environment with destabilized infrastructure
Fourth-Party Humanitarian Logistics

Thank you for your attention!

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