



Waste in carrier operations -

- The role of information

Motor Carriers



- Commoditized sector
- Generally said to be inefficient
 - Operators have low margins (0-2%)
- Freight transport has a large environmental impact
- High societal interest

- Large potential for improvement??

Outline



- Waste in transportation
- Previous initiatives
- Scope
- Our research
- Potential improvement
- Summary

Causes of Waste in Transportation



- External:
 - Geographical imbalance
 - Relative low cost of trucking
 - Customer demands
 - Infrastructure issues
- Internal:
 - Resource planning issues
 - Poor organization & communication
 - Driver related inefficiencies



- Conceptual work dominate in both national/EC projects and in academic literature:
 - Mathematical optimization
 - Network re-structuring
 - IT-centric concepts
- Dominating approach has been to focus on external factors and planning optimization, rather than on decreasing non-value adding operations



- Focusing on *value-adding* and *internal efficiency*, the idea has been to identify and quantify potential improvement

This presentation focus on Central/Northern-European medium-sized (20-100 trucks) motor carriers in distribution (local and regional) of general cargo. Primary focus is on time efficiency

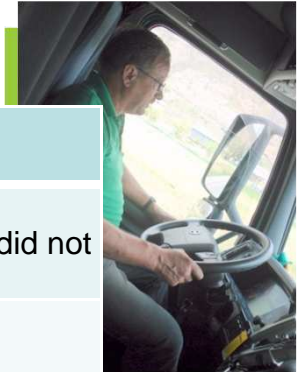
Method (ongoing)



- Day-to-day observations of 346 (21/10/2010) valid tours of driver operations in Germany, Switzerland and Sweden
- 30 different motor carriers

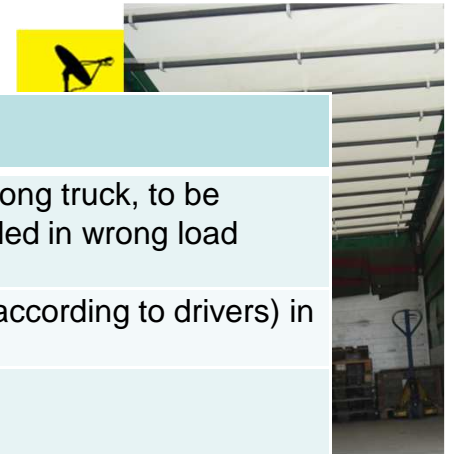
- Some sample observations:

"Georgie"



#	Activity	Time	Elapsed	Description
26	Walk	00:15:51	06:17:47	Ask about destination (construction site) - people asked did not know about it
27	Info	00:04:42	06:22:30	Call two calls. Second calls says that he sees the truck.
28	Drive	00:16:31	06:39:01	Return driving (pure waste)
29	Walk	00:11:08	06:50:09	Standing with construction site work leader. Not possible to get hold of the manager, since he was in a course. Impossible to drive waggon down the hill on the narrow street, impossible to unload 5m long wood constructs without crane. Customer says they ordered a transport with a crane.
30	Drive	00:05:13	06:55:23	Return driving (pure waste)
31	Drive	00:01:18	06:56:44	
32	walk	00:03:15	06:59:59	Arriving to Address. Address was wrong, address of the company was not address of the terminal
33	Drive	00:01:04	07:01:04	Return driving (pure waste)
34	Walk	00:12:33	07:13:38	Go to terminal
35	Unload	00:08:52	07:22:30	Unloading 1 Pallet with tires (destination close to Zermatt, due to driver time regulations not possible to bring along since time had run out) and the wood constructs. Driver enters "break" in the board computer
		01:20:29		

”Marcie”



#	Activity	Time	Elapsed	Description
1	Wait	00:17:42	00:17:42	Waiting for one pallet, loaded onto the wrong truck, to be returned to the terminal. Load pallet (loaded in wrong load sequence)
3	Maintenance	00:02:26	00:22:39	Filling up fluids, due to error (reoccurring according to drivers) in the workshop.
10	Break	00:01:09	01:04:49	Buy cigarettes
12	Break	00:12:11	01:22:29	Coffee break with the sister of the driver
71	Load	00:04:06	06:45:21	Loading 1 Pallet that had been forgotten at an earlier stop a few hours before
75	Drive	00:29:59	07:30:30	
76	Move	00:07:24	07:37:55	Moving goods inside truck, prepare loading
77	Walk	00:02:18	07:40:13	Asking/searching for information on unloading location. Proved to be wrong. Closing cover of truck.
78	Drive	00:01:34	07:41:48	Driving to other side of building
79	Walk	00:02:01	07:43:49	Asking/searching for information on unloading location. Truck correctly positioned
80	Wait	00:01:59	07:45:49	Waiting for customer special fork lift to arrive
81	Move	00:01:16	07:47:05	Drive backwards to more suited loading location
82	Load	00:12:40	07:59:46	Heterogenous goods, needing special lift to load
94	Wait	00:23:48	10:34:48	Waiting for carrier terminal fork lift to unload wood construct. Preparing for unloading by opening truck side

Preliminary Results



- Approx. 27,82% of drivers' time are fully or partly waste
 - +5% of drivers' time are spent on information/administration
 - Walking
 - Phone (15-30 phone calls/day)
 - Information often not used
 - 4-5% of drivers' time are spent on waiting
 - Frequent planning errors
 - Sequencing errors
 - Route planning errors

Preliminary Results



- In many cases, just the gate entrance procedure has a large potential:

Phase	Original setup	Field pilot	Avg. Diff
Staying in truck before entering office	01:14	00:00	01:04
Truck unattended (walking, check in)	07:01	00:00	07:01
Staying in truck after administration procedure	00:54	00:00	00:54
Gate opening	01:02	00:47	00:15
Average terminal entrance	10:11	00:47	09:24

From Sternberg, Borgö & Nilsson (under review in Journal of Business Logistics)



- Drivers do not use systems as intended
- Drivers do not use information as intended
- Excessive manual document processing in office
- Wasteful information handling...
 - Delays loading/unloading
 - Cause planning errors
 - Increased driving
 - Stress

Potential of Intelligent Cargo



- Decentralized freight information is one important piece of the solution
- Based on use and sharing of information, state-of-the-art technology and processes, a 5% transport time reduction is a short-term realistic goal

Summary



- Information use and organization plays a major role in improving the internal efficiency of motor carrier operators
- With more time...
 - Easier to match to customer demands
 - Increase fill rate
 - Enable slower driving
 - Value-adding services
- Further research needed to investigate the potential of increased time availability

Questions?



- The results of this research will be presented in a scientific paper at the Nofoma 2011 conference in Harstad, Norway



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