Rethinking port services: Added value, efficiency and productivity in intermodal transport systems

Trial Lecture

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Agenda

• Introduction - Traditional port services
• Why we should rethink port services
• Value added port services
• Practical examples:
  o Larvik
  o London
• Conclusion
## Traditional port services

<table>
<thead>
<tr>
<th>Service to vessels</th>
<th>Service to cargo</th>
</tr>
</thead>
<tbody>
<tr>
<td>○ Approach channel and navigation aids</td>
<td></td>
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<tr>
<td>○ Berthing / unberthing</td>
<td></td>
</tr>
<tr>
<td>○ Pilotage, Towage, Mooring gangs</td>
<td></td>
</tr>
<tr>
<td>○ Supplies, Bunker, Water, Waste reception, Repairs</td>
<td></td>
</tr>
<tr>
<td>○ Cargo transfer, e.g. opening/closing of hatches</td>
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<tr>
<td>○ Cargo handling on ship and quay</td>
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<tr>
<td>○ Transport to/from storage</td>
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<td>○ Storage/warehousing</td>
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<td>○ Surveying</td>
<td></td>
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<tr>
<td>○ Customs</td>
<td></td>
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<tr>
<td>○ Connection to inland transportation</td>
<td></td>
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</table>

(Alderton, 2005)
Traditional port services

Port users include:
- Shipping lines
- Shippers
- Trucking firms
- Railroad firms

Service providers in ports:
- Port authority
- Terminal operators
- Freight forwarders
- Stevedores
- Customs
- Ship agents
- Line handlers (mooring)
- Pilots
- Towage
- Bunker suppliers

(Alderton, 2005)
Rethinking traditional port services

Automated mooring technology eliminating conventional mooring lines

www.cavotec.com
Why we should rethink port services

Globalized supply chains makes it attractive for shippers to outsource value adding services to logistics service providers at strategically placed nodes – e.g. **Ports**

(Christopher, 2005; Paixão and Marlow, 2003; Robinson, 2002)
Rethinking port services

Figure from: (Pettit and Beresford, 2009)
Rethinking port services

Traditional “Low value added”  Logistics platforms “high value added”

- Cargo handling
- Vessel servicing  
  Distribution centres (DC):
  - Temporary storage space
  - Inventory management
  - Cargo consolidation and deconsolidation
  - Packaging
  - Labelling

(Pettit and Beresford, 2009)
Third-party logistics (3PL)

The services may include:
- Demand forecasting
- Instructing customers
- Order receiving
- Order picking
- Invoicing
- Payment control
- Trace and track

- Product testing
- Product repair
- Product installing
- Product assembling
- Product countrylizing
- Spare parts logistics
- Warranty handling

(Christopher, 2005)
Intermodal transport system

• Various modes of transport are utilized in the sequential movements of goods in **one and the same loading unit** (e.g. container) without handling of the goods during transfers between modes (UNECE, 2001)

• TEU = Twenty-foot Equivalent Unit

• Ports are nodes in intermodal transport system

• Information systems (IS) are key in intermodal transport systems
Transport modes

Truck

Rail

Shipping

Truck

(INLOG, 2009)
Container discharging / loading

Photo: Halvor Schøyen
Key issues in intermodal transport systems

• Increased demand and imbalances in freight flows

• Vertical and horizontal integration among actors seeking increased market power to:
  o Fulfil demand requirements
  o To achieve gains from economies of scale and economies of scope

• Logistics information systems and implementation challenges

(Bø, 2012; Maersk, 2006; Notteboom, 2002)
Port service productivity and efficiency

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Internal facing</th>
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<td>Productivity</td>
<td>Absolute measure Output/Input</td>
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<tr>
<td>Efficiency</td>
<td>Relative measure Benchmarking</td>
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(Wang et al, 2005)
## Port service added value

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(Wang et al, 2005)
Creating value for who?

Creating added value for:
- Supply chain
- Port actors & partners
- Port stakeholders

Port stakeholders:
- Neighbours & local municipality
- Port environmental matters
- Sustainable development – e.g. coastal ecology

(Alderton, 2005)
Value is created in relationships

- Intra-firm relationships
- Inter-firm relationships

(SDerived from Vitsounis and Pallis, 2012)
Creating value: Educated labour force

Skills needed:
- Port marketing
- Port operations
- Port logistics – 3PL
- Port engineering
- Port safety
- Port security

(Thai, 2012)
Example I: Larvik container port

- A small gateway container port – and 2\textsuperscript{nd} largest container port in Norway

- North Sea and Baltic container pendulum services

- Exports of granite (Larvikitt) and imports of consumer goods

- Long lasting relationships between port actors:
  - Family businesses
  - “Team Larvik”

- Port productivity: Measured as quay cranes no. of container moves per hour

Hatteland (2010)
Rethinking Larvik’s port services
Larvik container port
Creating added value

Photo: Halvor Schøyen
Reflecting over Larvik container port services

- Value added services are developed in **incremental steps:**
  - Investments in port facilities and new services
  - Logistics park and rail terminal in the port area?
- Larvik struggles to find its positioning in integrated supply chains, cf. Pettit and Beresford (2009)
- Seemingly long term and strong relationships between port actors
Example II: London container port

There has always been a rethinking...

(Alderton, 2005)
(DP World, London Gateway, 2013)
London Gateway value-adding services

- 3PL activities in logistics park adjacent to the container terminal
- Reduced trucking to service the London consumer markets - Environmental benefits
- Rail terminals in both the port and the logistics park
- Overweight containers between the port and the park allows containers to exceed UK road weight restrictions
- Feeder vessels for transporting goods to other locations around the UK, Ireland and Continental Europe

To give you an idea of the size of some of the ships that will visit London Gateway…

Economies of scale in shipping
The population and their income

Total Population
The total population of each county is indicated by its extruded vertical height.
Source: Office for National Statistics
Mid-2008 to Mid-2009 Population Estimates

Disposable Income
Disposable income is indicated by the following colour-coding:

<table>
<thead>
<tr>
<th>EUROS</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 17,000</td>
<td>Light Grey</td>
</tr>
<tr>
<td>17,000 - 18,000</td>
<td>Yellow</td>
</tr>
<tr>
<td>18,000 - 19,000</td>
<td>Orange</td>
</tr>
<tr>
<td>19,000 - 20,000</td>
<td>Light Orange</td>
</tr>
<tr>
<td>20,000 - 21,000</td>
<td>Orange</td>
</tr>
<tr>
<td>21,000 - 22,000</td>
<td>Dark Orange</td>
</tr>
<tr>
<td>&gt; 22,000</td>
<td>Red</td>
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Source: European Commission 2007

West Midlands
Total Population: 2,536,700
Disposable Income: < 17,000 to > 22,000 Euros

Hampshire
Total Population: 1,729,800
Disposable Income: 17,000 to > 22,000 Euros

Greater London
Total Population: 7,753,600
Disposable Income: 20,000 to > 22,000 Euros

Surrey
Total Population: 1,113,106
Disposable Income: > 22,000 Euros
London Gateway

London Gateway can potentially reduce road haulage by approximately 40m km per year. Equivalent to reduction of 500 trucks per day.

30% by rail

Short sea shipping option

(Notteboom, 2010)
Reflecting over London Gateway

- In-balance in UK demand and supply for port services
- Port service differentiation: Logistics Park and quay cranes’ productivity
- To which extent are actors willing to commit in interdependencies in order to create value?
  - Global shipping container liners
  - Global terminal operators
  - 3PL actors
Conclusion

• Ports have to compete to be locations for logistics services

• Every port has its own natural situation and logistics hinterland, hence value-added services for one port is different to another

• Creating value lies in close relationships between actors

• Challenge to examine ‘value’ in relationships

• Great imbalance in power and bargaining positions in some port settings makes the development of closer relationships more difficult
Thank you for your attention!


INLOG (2009) Introduction to logistics lecture, Vestfold University College.


The Economist (2011) Dockers’ return - Quietly, a huge new port is being built close to the capital. Available at: [http://www.economist.com/node/21541456](http://www.economist.com/node/21541456) [read: April 19, 2013].


