PRD Competition
To
Hong Kong
Maritime Logistics Industry

Collin WH Wong
Media Coverage – Mainland Cabotage Study

內地推沿海捎帶
港轉口貨櫃年減240萬個

香港港務局今年積極參加內地沿海捎帶業務，業務產生增長。根據內地港口務局資料，內地港口業務中，香港轉口貨櫃佔其中的14%。

【媒體報導】面對鄰近地區競爭，內地自貿試點近年持續擴展。香港相關業界發言人表示，為了香港及內地業務的發展，香港和內地企業必須密切合作。

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2015年香港與內地港口貨櫃吞吐量排名

HK likely to lose transshipment hub advantage

香港急須保持區內樞紐港角色

備放寬沿海捎帶 货櫃年減14%貨運

Relaxed mainland port rules could slice 1-tpc off Hong Kong’s container throughput, says report

City could lose less of transshipment traffic in the near future, DHL region sales manager said, adding that the firm remains optimistic.

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Strategic Position of Hong Kong

- Policy Address of 2015 on HK
  - “... well positioned to serve as a springboard for Mainland maritime companies looking to ‘go global’”
  - “…a platform for international maritime companies to tap the Mainland market”
  - “…an important international maritime services hub for China and the Asia-Pacific region”

- 13th Five-Year Plan for the National Economic and Social Development of PRC
  - “support for HK in enhancing its status as international financial, transportation and trade centers.”
Hong Kong’s Trading and Logistics Industry

- 765,000 employees in the trading and logistics sector
- 23.4% of Hong Kong’s total GDP
- HK - China’s second largest trading partner
  - HK throughput, over 85% related to China
- HK processed 90% of shipments by seaport
### Overview

**HKP ranking continues to drop over the years**

<table>
<thead>
<tr>
<th>Year</th>
<th>HK</th>
<th>SG</th>
<th>SG</th>
<th>SHG</th>
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</table>

HK – Hong Kong; SG – Singapore; SHG – Shanghai; SHZ – Shenzhen; BS – Busan; KS – Kaohsiung; NB-Z – Ningbo-Zhoushan; GZ – Guangzhou; LA – Los Angeles; RD – Rotterdam; DB – Dubai; QD – Qingdao
Overview

Composition of laden containers

Direct Transshipment

Policy Research Institute of GLOBAL SUPPLY CHAIN
Maritime Transshipment Development
Hong Kong’s Future Position

2015 Throughput '000 TEUs

- **HK Today**
- **HK Foreseeable Future**
Loss of Hub Capability to Shenzhen and Guangzhou

- **Hong Kong port**
  - 330 container vessels per week, connecting 470 destinations worldwide
  - Decreased by 30% compared to year 2000
  - From 2001 to 2015: container throughput increased from 17.8 million to 20 million

- **Shenzhen ports**
  - 226 weekly service to major ports
  - Only 35 weekly service in year 2000
  - Over half of routes involve both Hong Kong and Shenzhen.
  - From 2001 to 2015: container throughput increased from 5 million to 24 million

- **Guangzhou**
  - 197 liner services
  - over 160 domestic barge services.
  - From 2001 to 2015: container throughput increased from 2 million to 17 million
Total Throughput of Hong Kong & Shenzhen Ports

000 TEU

Shenzhen  Hong Kong

Policy Research Institute of GLOBAL SUPPLY CHAIN
Competition from PRD Ports – Impact to PRD-Transshipment

HK’s Proportion of (Shenzhen + Hong Kong) Throughput

![Graph showing the proportion of Shenzhen and Hong Kong throughput from 2001 to 2015. The graph indicates a decrease in the proportion over time.](image-url)
Competition from PRD Ports – Impact to PRD-Transshipment

- **Decrease** in land transportation between Hong Kong and the PRD region
Double-counted Effect

Throughput ('000 TEUs)

2001 = 2015 throughput!
Recommendations

On Innovations to capture Emerging Market of the Region

1. Collaborations with PRD Special Economic Zones

- Strengthen cooperation between HK and PRD regions
- Guangdong-HK-Macau Cooperation zone
- Collaboration between Stakeholders of the Region
- Belt and Road Initiative – policy coordination
On Innovations to capture Emerging Market of the Region

2. HK as major Import Gateway of China

- China’s import is increasing
- HK - Free port and well-established logistics connectivity
- From outbound logistics to inbound logistics
- Belt and Road Initiative
Recommendations

On Innovations to capture
Emerging Market of the Region

3. To capture part of the e-Commerce Market
   - China - Largest cross-border B2C market by 2020 with imported goods purchased online reaching US $245 billion
   - Collaboration between Maritime logistics stakeholders to target e-Commerce Market

Source: iResearch Global Inc
Recommendations

**Schemes to increase competitiveness of HK Logistics Industry**

- Upgrade logistics facilities and services
- Single-window operation
- Expand the terminal capacity and facilitate collaboration
- Innovative technologies and systems
- Headquarter incentive schemes and tax regimes
- Incentive policies on ancillary shipping services
- Increase bilateral double taxation relief
Collaboration at the Hong Kong Port –
Benefits from Facility Sharing

Collin WH Wong, Helen HL Ma, Lawrence C Leung
恒管倡貨碼共享設施增效率

星島日報 2018年8月13日

恒管倡貨碼公司共享裝卸設施

報告星政府向碼頭公司廂報

恒生管理學院倡議貨碼港貨碼港貨碼港貨碼港貨碼港貨碼港貨碼港貨碼港貨碼港貨碼港貨碼港貨碼港貨碼港貨碼港貨碼港貨碼港貨碼港貨碼港貨碼港貨碼

文匯報 2018年8月14日

恒管倡貨碼共享設施增效率

恒管倡貨碼共享設施增效率
Overview

Background

- HKP was built in the 1970s to mainly cater for direct shipments.

Economic impact of the HKP

- 88,000 direct employees in 2017
- 300,000 direct and indirect employees
- 7.8% of total employment
- 3.4% of total GDP
Steady decline of HKP throughput from 2004-2017

HKP was the only port in Asia to experience a decline in throughput volume (recorded 10%) in 2012 to 2017.
Overview

Reasons for increase in HKP’s transshipment business

- Larger Carrier Alliances
- More Cargo Co-loading
- Increase in Vessel Size
Challenges
Carrier Alliances

Terminal Operator 1
Liner A
Liner E

Terminal Operator 2
Liner B

Terminal Operator 3
Liner C

Terminal Operator 4
Liner D

Terminal Operator 5

Direct Transshipment

Liner A
Liner B
Liner E

Direct Transshipment

Liner C
Liner D
Inter-Terminal Transfer

Terminal Operator 1

Terminal Operator 2

Terminal Operator 3

Terminal Operator 4

Terminal Operator 5

Cargo co-loading

Vessel Size

Alliance X

Alliance Y

Direct Transshipment

Inter-Terminal Transfer (ITT)
New Shipping Alliances

April 2017

(1) 2M Alliance: Maersk, MSC, HMM

(2) THE Alliance: Yang Ming, Hapag-Lloyd (with UASC), ONE (NYK, MOL, K Line; as of April 2018)

(3) Ocean Alliance: CMA CGM, Evergreen, OOCL, COSCO Shipping

Asia-Europe Services:

Singapore +7 weekly calls

Hong Kong -5 weekly calls

Comprises 96% of all East-West trade

Comprises 77.2% of global container capacity

Comprises 77.2% of global container capacity
Current Procedures

- Extra yard operations
- Extra truck movements
- Higher costs
- Lower operation efficiency

About 15% of containers require ITT
Current Charges

Hong Kong Charges
HK$ 2,140

ITT charges:
HK$300

14% savings
Limited Yard Capacity

<table>
<thead>
<tr>
<th>Port</th>
<th>No. of Berths</th>
<th>Yard Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>67</td>
<td>700 ha</td>
</tr>
<tr>
<td>Shenzhen</td>
<td>41</td>
<td>792 ha</td>
</tr>
<tr>
<td><strong>Hong Kong</strong></td>
<td><strong>24</strong></td>
<td><strong>279 ha</strong></td>
</tr>
<tr>
<td>Guangzhou</td>
<td>16</td>
<td>643 ha</td>
</tr>
</tbody>
</table>

— Higher re-shuffle rate
— Extra yard operations
— Low yard operation efficiency
Singapore vs. Hong Kong

- Singapore has consistently outperformed Hong Kong in terms of container throughput.
Port Collaboration Around the World

The Northwest Seaport Alliance (Seattle, Tacoma)
Port of Portland
Port of Vancouver
Port of Los Angeles
Port of Long Beach

Port of Miami
(South Florida Container Terminal and Port Miami Terminal)

Port of Portland

Port of Rotterdam

Port of Hamburg
Port of Cuxhaven
Port of Brunsbüttel
Port of Glückstadt
Ports of Lübeck and Kiel

Hanshin Port
(Kobe, Osaka, Amagasaki-Nishinomiya-Ashiya, Sakai-Semboku)

Port of Tokyo
Port of Yokohama
Port of Kawasaki

Port of Ningbo-Zhoushan
(Ningbo, Zhoushan, Jiaxing, Taizhou and Wenzhou)
The Proposed “Collaboration Model”
Benefits According to Previous Studies

- Reduce costs
- Eliminate non-value-added activities
- Increase flexibility and utilisation
- Provide better customer service
- Market as one terminal
- Unify and simplify procedures for using any terminal


Collaboration Model

- We studied the benefits of facility sharing between the nine container terminals and five operators at HKP.
- Our goal was to minimise the overall ITT

ACT, CHT and HIT signed co-management agreement in Dec, 2016.
Collaboration Model

1. Zone Allocation
   - Alliance Volumes
   - Zone capacity (Quarterly)

2. Berth Allocation
   - Vessel size, schedule, unload and load volume
   - Berth availability
   - Transshipment dependency (Daily/Weekly)

3. Facility Sharing Simulation
   - ITT Status
   - Handling Time
   - Heuristics
Collaboration Model

Alliance A

Alliance B

Alliance C

Zone 1

Zone 2

Zone 3
Collaboration Model – Simulation Setup

- One month historical data in 2017
- Over 200 arriving vessels per week

**Six scenarios:**

- S1: Average scenario
- S2: High container volume scenario (+25% volume)
- S3: Low container volume scenario (-25% volume)
- S4: Extremely high container volume scenario (+50% volume per container)
- S5: Extremely low container volume scenario (-50% volume per container)
- S6: High vessel number scenario (+50% vessels)
Collaboration Model – Simulation Setup

**Benchmarking Approach**
- Without (Full) Collaboration (A1)

**Proposed Approach**
- With Collaboration (A2)
  - Majority of ITT can be replaced by direct operations
### Results

(1) Analysis on ITT performance

<table>
<thead>
<tr>
<th>Simulation no.:</th>
<th>ITT (Number of moves)</th>
<th>Without Collaboration (A1)</th>
<th>With Collaboration (A2)</th>
<th>Improvement With Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-year estimation</td>
<td>1-year estimation</td>
<td>Absolute terms</td>
<td>(%)</td>
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<tr>
<td>S1</td>
<td>589,110</td>
<td>298,066</td>
<td>-291,044</td>
<td>-49%</td>
</tr>
<tr>
<td>S2</td>
<td>682,863</td>
<td>375,446</td>
<td>-307,417</td>
<td>-45%</td>
</tr>
<tr>
<td>S3</td>
<td>404,524</td>
<td>198,351</td>
<td>-206,173</td>
<td>-51%</td>
</tr>
<tr>
<td>S4</td>
<td>836,545</td>
<td>499,285</td>
<td>-337,260</td>
<td>-40%</td>
</tr>
<tr>
<td>S5</td>
<td>274,880</td>
<td>130,166</td>
<td>-144,714</td>
<td>-53%</td>
</tr>
<tr>
<td>S6</td>
<td>561,283</td>
<td>361,871</td>
<td>-199,412</td>
<td>-36%</td>
</tr>
<tr>
<td>S1</td>
<td>177</td>
<td>89</td>
<td>-88</td>
<td>-49%</td>
</tr>
<tr>
<td>S2</td>
<td>205</td>
<td>113</td>
<td>-92</td>
<td>-45%</td>
</tr>
<tr>
<td>S3</td>
<td>121</td>
<td>60</td>
<td>-61</td>
<td>-51%</td>
</tr>
<tr>
<td>S4</td>
<td>251</td>
<td>150</td>
<td>-101</td>
<td>-40%</td>
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<tr>
<td>S5</td>
<td>82</td>
<td>39</td>
<td>-43</td>
<td>-53%</td>
</tr>
<tr>
<td>S6</td>
<td>168</td>
<td>109</td>
<td>-59</td>
<td>-36%</td>
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</table>
Results

(I) Analysis on Cost (Port Charge) Performance

Inter-Terminal Transfer (ITT)

- **Without Collaboration (A1)** a total 589,110 ITT in S1 ≈ HK$ 177M annually

- **With Collaboration (A2)** save about 49% cost in ITT in S1 ≈ HK$ 88M annually
## Results

(II) Analysis on Environmental Performance – C0₂ Emission per ‘000 (KG)

<table>
<thead>
<tr>
<th>Simulation no.:</th>
<th>Without Collaboration (A1)</th>
<th>With Collaboration (A2)</th>
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<td>S5</td>
<td>5,289</td>
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<td>S6</td>
<td>10,816</td>
<td>8,629</td>
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</table>
Results

(III) Analysis on Traffic Congestion

582,088 unnecessary round trips per year

1,595 unnecessary trips per day

Relieve road usage
Results

(IV) Analysis on Berth Utilisation

Berth Utilisation (%)

- Without Collaboration (A1)
- With Collaboration (A2)

Area Dimensions

1 2 3 4 5 6

Utilisation (%)

50% 60% 70% 80% 90% 100% 110%
### Results

(V) Analysis on Service Quality Performance – Delayed Vessels

<table>
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<th>Simulation no.:</th>
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<td>Estimation of the annual number of delayed vessels (&gt;4 hours)</td>
<td>Estimation of the annual number of delayed vessels (&gt;4 hours)</td>
<td>Change in number of delayed vessels</td>
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<td>243</td>
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<td>435</td>
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<td>17</td>
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<td>53</td>
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<td>8,690</td>
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## Results

### (V) Analysis on Service Quality Performance – Waiting Time

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<td>2.3</td>
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<tr>
<td>S6</td>
<td>15.6</td>
<td>8.7</td>
<td>-6.9</td>
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Summary of Benefits (Average Scenario, S1)

1. ITT could be cut by 49%
2. Shipping lines could save HK$88 million annually
3. Improved service quality: waiting time could be reduced by almost an hour
4. Potential port charges reduced
5. The port will be better utilised
6. Minimise negative impact on the environment (4,655 tonnes of CO₂)
Strategic Collaboration

Market

Competing
Sharing

Terminal Operator 1
Terminal Operator 2
Terminal Operator 3
Terminal Operator 4
Terminal Operator 5

Shared Resources and Facilities
Recommendations

- Terminal operators to collaborate and share facilities (e.g. berths, cranes, yards, etc.)
- Entire port operations integrated:
  - Real-time facilities status
  - Scheduled and actual vessel status
  - Transshipment container information
- The operational collaboration details must be well planned
- To stay competitive, breakthroughs are needed to create new values and provide value-added services