

Retail Supply Chain Innovation: Insights from Singapore

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TLIAP Programs:

EDUCATION

- GT-NUS Double MSc. in Logistics & Supply Chain Management
- NUS MSc. in Supply Chain Management

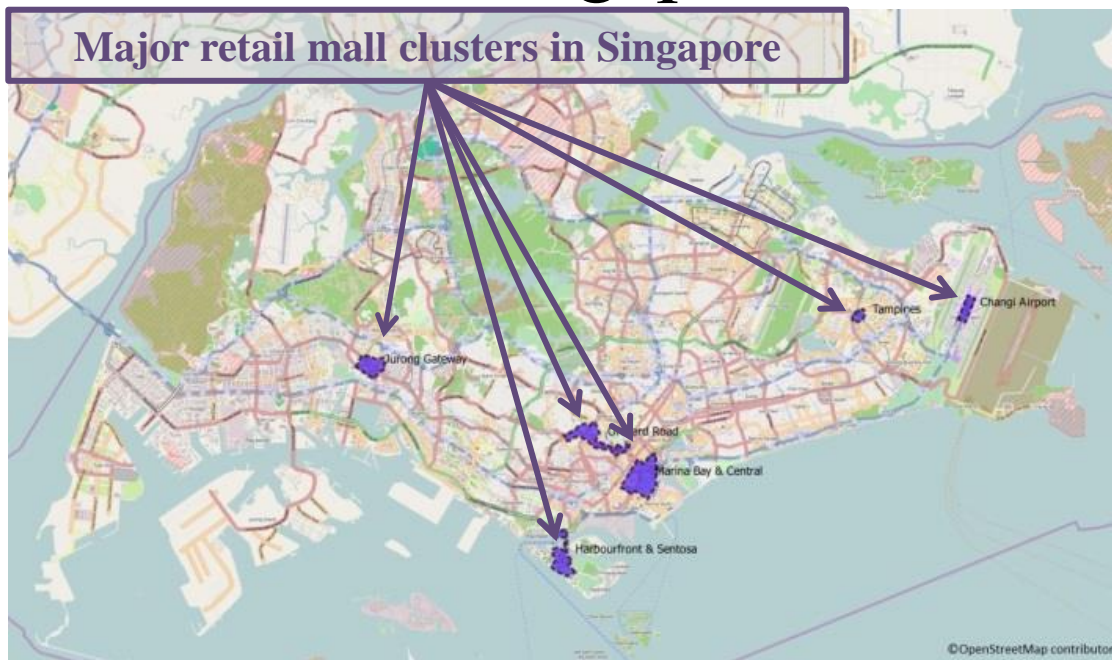
RESEARCH

- Collaborative Urban Logistics Program
- Humanitarian Logistics Program
- Risk Management Program
- Industry Research

INDUSTRY OUTREACH

- THINK Executive
- THINK IT
- THINK Innovation
- THINK Logistics

Singapore's retail malls



- More than 50% of Singapore's retail outlets are concentrated in the shopping malls
- **Retail mall clusters** are the results of limited land benefiting from the common infrastructural services for the retailers in the clusters

Major Challenges for Retail Malls

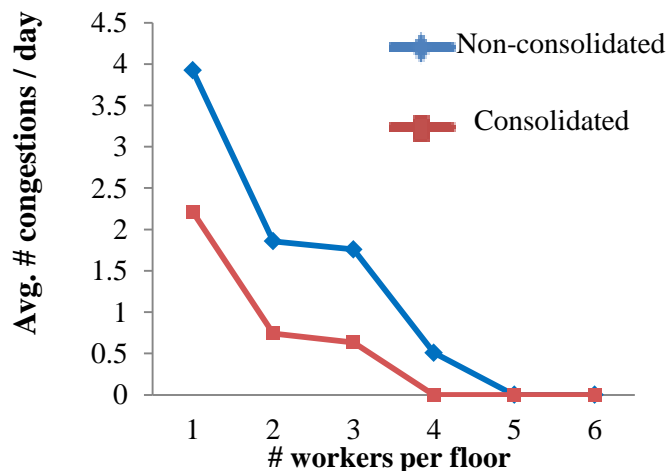
Labour Productivity	Traffic Congestion
Short supply on low/semi-skilled labour.	Congestion both in the malls (i.e. car parks) and on the nearby roads of cities.
Resources are significantly under-utilized.	Delivery delays, air pollutions and affects customer satisfactions
Methodologies are required to improve workforce utilization	

Research Objective: Investigate **innovative supply chain initiatives and approaches** which lead to **improved resource utilization** in the retail logistics, **higher efficiency** in in-mall operations and **sustainable urban development**.

Some Details & Contributions

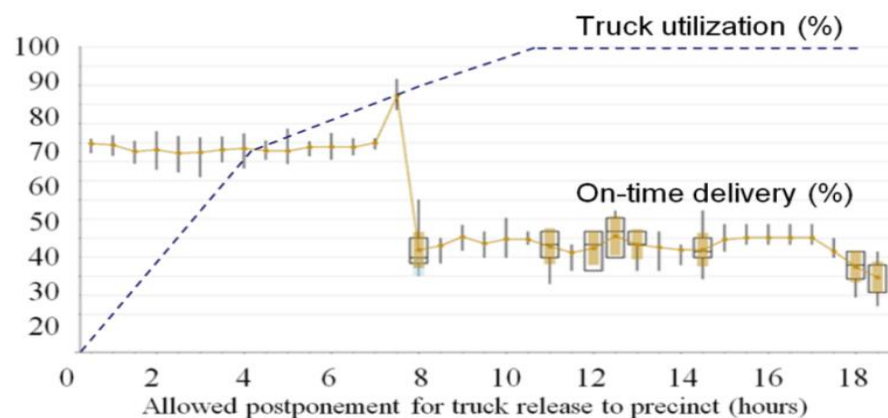
Improvements with In-Mall Operations

- The consolidated in-mall system reduces the required number of workers on each floor to achieve the acceptable congestion per day
- The result shows a potential labour demand reduction of >50%



Improvements with In-Mall Operations

- The result suggests that postponing the delivery as late as possible to achieve a 100% truck utilization will diminish delivery performance
- The optimal postponement is 8 hours, which can improve the degree of on-time-deliveries by at least 40 % and at the same time improve truck utilization



Managerial Insights

- Like in any rapidly growing city in Asia, the retail mall clusters in Singapore are currently facing major distribution challenges, particularly in the last-mile
- To respond to these challenges, the innovative supply chain approach is inevitable. We consequently offer a simple-yet-sustainable approach, called “**collaborative retail supply chain**”
- Two solutions under collaborative supply chain are tested to address the traffic congestion and labour productivity issues, by optimizing information and physical flows to the retail cluster (**dynamic consolidation**) and by tackling the inefficiencies of logistics in the cluster (**within-mall optimization**)

Next Step

