

# SMUENGAGE



Professor of Operations Management Lim Yun Fong

## CUTTING EDGE RESEARCH

# Contributing to research impact in urban last-mile delivery

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**Contributing to research impact in urban last-mile delivery** SMU has always emphasised the importance of research addressing real-world issues, striving to contribute to research that makes an impact on business, government and society.



Recently, the ***Financial Times (FT)*** has also recognised **SMU's research impact**, with SMU's Lee Kong Chian School of Business (LKCSB) being ranked 1st in Singapore and 2nd in Asia in the *Financial Times* Aggregated Research Ranking.

A research paper that contributed to this recognition was titled “Urban consolidation center or peer-to-peer platform? The solution to urban last-mile delivery” by **Professor of Operations Management Yun Fong Lim** and **Associate Professor of Operations Management Xin Fang**, as well as Assistant Professor Qiyuan Deng from the Chinese University of Hong Kong.



Associate Professor of Operations Management Fang Xin.

The paper was published in the journal *Production and Operations Management*, and was cited in a patent application by ecommerce company eBay – demonstrating its impact.

**To consolidate or not to consolidate?**

The research found that implementing a central location for deliveries, referred to by authors as an urban consolidation centre (UCC), was useful in keeping congestion and pollution under control. This centralised approach also reduces delivery costs when compared to a peer-to-peer platform where individual drivers are assigned to specific orders.

While a UCC bears the delivery cost, authors found that it can achieve a larger economy of scale, given that each truck can consolidate tasks that would otherwise be assigned to multiple carriers. This also makes the model efficient when it comes to mitigating negative social-environmental impacts – like increased traffic and pollution.

### **Advantages of peer-to-peer platforms**

However, the authors also found that there are specific scenarios where a peer-to-peer platform is more advantageous, specifically when variable delivery costs are low, since overheads are reduced, and the system can more quickly adapt to demand as it varies.

“Since the profit margin of last-mile delivery is low, the question is: which business model can make consolidated last-mile deliveries financially and environmentally sustainable?” Prof Lim told *FT*, explaining the inspiration behind the authors’ research.

### **Practical Implications and Future Research**

Prof Lim added, “Knowing that our paper has been cited in a patent application is strong encouragement to work on meaningful research with practical impact. It’s always more rewarding to work on research projects motivated by real settings in

industry, as it creates more opportunities for us to interact with industry, and means our students are more engaged when we share our research findings in the classroom.”

Besides this paper, Prof Lim also has research interests in the areas of sustainable urban systems and flexible workforce and resource management among others – many of which are areas that can benefit from academic research paving the way with its findings for various policies and the adoption of various business practices.

In 2022, he won the second prize of The ISCOM Conference Best Paper Award for his working paper on joint pricing and refund optimisation for omnichannel retailing; he was also conferred Chang Jiang Chair Professorship by the Ministry of Education of China and The Li Ka Shing Foundation in 2016-2019; and awarded the Neptune Orient Lines (NOL) Fellowship in 2012-2014 from the shipping company.

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