The Research Grants Council of Hong Kong
NSFC/RGC Joint Research Scheme
<u>Joint Completion Report</u>

(Please attach a copy of the completion report submitted to the NSFC
by the Mainland researcher)

Part A: The Project and Investigator(s)

1.   Project Title

Investigating New Methodologies in Transportation Service Procurement between Shippers and Carriers

2.   Investigator(s) and Academic Department/Units Involved

	Hong Kong Team	Mainland Team
Name of Principal Investigator *(with title)*	Prof LIM Leong-chye Andrew	Prof WANG Fan (Sun Yat-sen University)
Post	Professor	Professor
Unit / Department / Institution	Department of Management Sciences, College of Business, City University of Hong Kong	School of Business, Dept of Management Sciences, School of Business, Sun Yat-sen University
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Co-investigator(s) *(with title and institution)*	Dr LI Yanzhi (CityU)	Prof SONG Haiqing (Sun Yat-sen University)

3.   Project Duration

	Original	Revised	Date of RGC/ Institution Approval *(must be quoted)*
Project Start date	01-Jan-2012		
Project Completion date	31-Dec-2014		
Duration *(in month)*	36		
Deadline for Submission of Completion Report	31-Dec-2015		

Part B: The Completion Report

5.   Project Objectives

5.1   Objectives as per original application

1. For the quotation part of the cycle, we investigate the practical conundrum of why different modes have different forms of quotations. Furthermore, we would like to understand the pros and cons of certain quotation forms (i.e. combinatorial bid packages), and the various (operational or relational) challenges from the perspectives of the shippers and the carriers.

2. For the simulation and optimization part of the cycle, we investigate and try to solve the different constraints and objectives formulated by the different parties in the different transportation modes. Of significant interest and practicality is to understand the impact(s) when

quotation forms change from a collection of single lanes to a collection of sets of lanes; in particular, we would like to study how we can solve these problems independently and then collectively.

3. For the negotiation part of the cycle, we are keen to research and understand the different approaches adopted by both the shippers and carriers. In particular, we believe that when we have understood the negotiation rationales of shippers and carriers, we could then come up with the design and development of a scenario optimizer that would assist shippers and carriers independently at first, and collectively, later.

4. Holistically, we attempt to piece the practical puzzle; to determine if the three processes in Cycle B can be combined effectively. We are keen to determine if collective optimization between the shippers and carriers are even possible. Hence, a significant part of the entire research project would also entail exploratory and empirical investigations of the three processes in the cycle; in particular, we hope to understand the challenges faced by the shippers and carriers – challenges that may be objective or latent in nature and through understanding the challenges, we may then begin to develop new approaches to facilitate supplier-buyer collaboration among other essential ingredients necessary in transportation service procurement.

5.2   Revised Objectives

Date of approval from the RGC: __N/A_____

Reasons for the change: _____

_____

1.
2.
3. ....

6. Research Outcome

Major findings and research outcome
(maximum 1 page; please make reference to Part C where necessary)

We developed different models and proposed near optimal problem solving methods to solve various transportation procurement problems. These models can be used in current real world practice. Some of these models have been tested by companies such as Philips Global.

Potential for further development of the research and the proposed course of action
(maximum half a page)

It will be interesting to really solve and implement Objectives (3) and (4) in a real world setting. Perhaps, the best way to do it is to sell the ideas to interested companies and get the buy in from their top management before embarking on such research.

7. The Layman's Summary
(describe <u>in layman's language</u> the nature, significance and value of the research project, in no more than 200 words)

The models and solutions developed in this research have many practical values. Some of these ideas are implemented and tested in real world settings. However, some of the objectives were not realized because the ideas proposed were to new and companies are not able to take such risks. As such, the value of these ideas cannot be evaluated comprehensive.

Part C: Research Output

8. Peer-reviewed journal publication(s) arising <u>directly</u> from this research project
(Please attach a copy of each publication and/or the letter of acceptance if not yet submitted in the previous progress report(s). All listed publications must acknowledge RGC's funding support by quoting the specific grant reference.)

The Latest Status of Publications				Author(s)	Title and Journal/ Book	Submitted to RGC	Attached to this report (Yes or No)	Acknowledged the support of this Joint Research Scheme (Yes or No)	Accessible from the institutional repository (Yes or No)
Year of publication	Year of Acceptance *(For paper accepted but not yet published)*	Under Review	Under Preparation *(optional)*	*(bold the authors belonging to the project teams and denote the corresponding author with an asterisk*)*	*(with the volume, pages and other necessary publishing details specified)*	*(indicate the year ending of the relevant progress report)*			
2014				H. Qin, Z. Zhang*, Z. Qi, **A. Lim**	"The freight consolidation and containerization problem", European Journal of Operational Research, 1, 234, 37-48	31-12-2015	Yes	No	Yes
2012				X. Gao, **A. Lim**, W. Oon, H. Qin*	"An Algorithm for the Freight Allocation Problem with All-Units Quantity-Based Discount", Omega-International Journal of Management Science,40, 4, 415–423	31-12-2015	Yes	No	Yes
2012				**A. Lim**, H. Qin*, Z. Xu	"The Freight Allocation Problem with Lane Cost Balancing Constraint", European Journal of Operational Research, 217, 1, 26-35.	31-12-2015	Yes	No	Yes
			2015	Q. Hu, **A. Lim**	"Transportation Service Procurement with Total Quantity Discount", Management Science	31-12-2015	No	Yes	--

9. Recognized international conference(s) in which paper(s) related to this research project was/were delivered *(Please attach a copy of each delivered paper. All listed papers must acknowledge RGC's funding support by quoting the specific grant reference.)*

Month/Year/Place	Title	Conference Name	Submitted to RGC *(indicate the year ending of the relevant progress report)*	Attached to this report *(Yes or No)*	Acknowledged the support of this Joint Research Scheme *(Yes or No)*	Accessible from the institutional repository *(Yes or No)*

10. Student(s) trained *(Please attach a copy of the title page of the thesis.)*

Name	Degree registered for	Date of registration	Date of thesis submission/ graduation
Hu Qian	Ph.D.	Sept 2010	2014

11. Other impact *(e.g. award of patents or prizes, collaboration with other research institutions, technology transfer, etc.)*