

*The Hong Kong Polytechnic University*  
*Department of Logistics and Maritime Studies*  
*Research Seminar*

**Incentive Based Service System Design: Staffing and Compensation to Trade Off Speed and Quality**

by

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**Date: 7 July 2016 (Thursday)**  
**Time: 10:30am - 11:30am**  
**Venue: M103, Li Ka Shing Tower**  
**The Hong Kong Polytechnic University**  
**(Conducted in English)**

**Abstract:**

Most common queueing models used for service system design assume the servers work at fixed (possibly heterogeneous) rates. However, real-life service systems are staffed by people, and people may change their service speed in response to their compensation incentives. The delicacy is that the resulting employee service rate affects the staffing, but also the staffing affects the resulting employee service rate. Our objective in this paper is to find a joint staffing and compensation policy that induces optimal service system performance.

We do this under the assumption that there is a trade-off between service speed and quality, and employees are paid based on both. The employees each selfishly choose their own service speed in order to maximize their own expected utility, which can have both a monetary and a non-monetary component. We characterize the symmetric equilibrium service speed in large systems under a simple linear staffing and compensation policy. We show that there is a limiting first best policy within that class. The important insight is that in the large system limit the problem decouples into one where the system manager first jointly determines the staffing and service speed, and second uses the compensation to achieve that desired service speed. We further show the conditions under which a critically loaded, efficiency-driven, quality-driven, or mixed regime in which there is simultaneous customer abandonment and server idling emerges under a first-best policy.

This is a joint work with Amy R. Ward.

**Bio:**

Dongyuan Zhan is an Assistant Professor in the School of Management at University College London. His research interests include the analysis and design of service systems with strategic employees, and product line design considering customer behavior. He obtained a Ph.D. degree from Marshall School of Business at University of Southern California.

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**All are welcome!**