The Hong Kong University of Science and Technology
Dept of Information Systems, Business Statistics
and Operations Management
Seminar Announcement

**Predicting Time to Upgrade under Successive Product Generations**

by

Mr Xinxue (Shawn) Qu
Ivy College of Business
Iowa State University

**Date**: 10 October 2018 (Wednesday)

**Time**: 10:00 - 11:30 am

**Venue**: ISOM Conference Room 4047, LSK Business Building

**Abstract**: In the presence of successive product generations, most customers are repeat buyers, who may decide to purchase a future product generation before its release. As a result, after the new product generation enters the market, its sales often show a declining pattern, making traditional bell-shaped diffusion models unsuitable for characterizing the timing of product upgrades by customers. In this study, we propose a *survival model with exponential-decay baseline function* (Expo-Decay model) to predict customers’ time to upgrade to a new product generation. Compared with existing proportional hazard models, the Expo-Decay model is parsimonious and easy to interpret. In addition, empirical tests using data for a major sports video game series show that the Expo-Decay model performs better than existing parametric models in both model fitting and prediction accuracy. Furthermore, we propose and test several extensions of the Expo-Decay model. Empirical results obtained using the Expo-Decay model also confirm that customers’ previous adoption and usage patterns are robust predictors of their time to upgrade to a new product generation. In particular, we find that (i) potential switching customers who have adopted the previous generation are more likely to upgrade; (ii) heavy players tend to upgrade earlier; (iii) specialized customers demonstrate a lower probability to upgrade. These findings can help firms better understand customers’ upgrade behaviors and develop more personalized promotions to target customers.

**Bio**: Xinxue (Shawn) Qu is a PhD candidate in Information Systems at Ivy College of Business, Iowa State University. His primary research interests include business analytics, multi-generation technology diffusion, and database management. In his research, he adopts a variety of quantitative methods including analytical modeling, econometric modeling, data mining/machine learning, and optimization. He has published in *MIS Quarterly* and *Decision Sciences*. He has actively presented his research at major conferences including the *INFORMS Annual Meeting*, the *Workshop on Information Technology and Systems (WITS)*, and the *Conference on Information Systems and Technology (CIST)*. He has served as a reviewer for *Journal of Management Information Systems* and the *International Conference on Information Resources Management*. His achievements in research were acknowledged by Iowa State’s Ivy College of Business, which awarded him with the inaugural Outstanding Doctoral Student Research Award in 2018 and the college-wide PhD Student Research in Excellence Award in 2017.