

Title: Multiplicity in Product Expiration Dates and Food Waste in Retail Stores

Speaker: Prof. Ashish Kabra, Nanyang Technological University (NTU), Singapore

Area: POM

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Abstract:

A grocery retailer incurs expiration waste (EW) at its store when a perishable product crosses its expiration date without being sold. One frequent scenario accounting for EW occurs when units of a given product with multiple expiration dates are simultaneously available on store shelves. In such situations, a consumer is likely to purchase a later-to-expire unit, which in turn increases the likelihood of EW of a sooner-to-expire unit. To mitigate the occurrence of such multiple-dates-led expiration waste (MDEW), retailers undertake a variety of interventions, including a price markdown of sooner-to-expire units and in-store inventory rotation. Most retailers, however, are often unaware of the extent of MDEW in their stores and, thus, are constrained in mitigating its occurrence. We provide the first large-scale evidence of the MDEW share of EW. We collaborate with a grocery retailer to compile a multi-category-multi-store dataset (~15.3 million sales transactions) on grocery products with three to 14 days of shelf life. Across these products, at the product-store-week level, EW as a percentage of sales is 23% on average. To quantify MDEW's share, we propose a novel and easy to implement methodology for computing its lower and upper bounds. In our retailer's context, the MDEW's lower and upper bounds equal 25% and 52% on average of the generated EW, respectively. Our study highlights MDEW's material share in generating EW; thus, it provides a solid premise for future in-depth academic investigation on MDEW management. Furthermore, for practitioners, it provides an immediately actionable methodology to measure MDEW in their store operations. Empowered with such a measurement ability, retailers can better plan their EW waste management interventions.

Speaker Profile:



Ashish Kabra, Assistant Professor at the Nanyang Business School, Singapore.

He conducts empirical and analytical research using causal inference, structural estimation, game theory, and optimization methods.

His research focuses on sustainability and platform operations in domains such as food waste in grocery retail, child labor policy, product returns in e-commerce, urban transportation, and digital platforms.

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