

Platform Supported Fashion Supply Chain Operations in the Blockchain Era: Supply Contracting and Moral Hazards

Tsan-Ming Choi (Jason)
The Hong Kong Polytechnic University

Abstract: Platform operations are very common in the sharing economy. Nowadays, fashion retailers can sell the end-of-season product leftovers to platforms which offer product rental services to the market. Motivated by this observed industrial practice, we build stylized fashion supply chain models to explore the platform supported supply chain operations. We uncover that the presence of the platform creates the “triple marginalization” problem in which supply chain coordination cannot be achieved even if the manufacturer is willing to supply at cost using the wholesale pricing contract. We show how the markdown sponsor (MS) contract can deal with the triple marginalization problem and achieve supply chain coordination. However, we illustrate that a moral hazard problem, in which the retailer has incentive to over-claim the amount of markdown sponsor, arises. We reveal that the moral hazard problem brings a loss to the manufacturer, an immoral gain for the retailer, and there is no impact on the platform and consumers. We analytically derive the impact of moral hazard (which means the loss to the manufacturer, and the gain for the retailer) and find that it relates to the markdown sponsor rate, as well as the degree of over-claiming. To overcome the moral hazard problem under MS contract, we propose measures such as the adoption of blockchain technology, and “discounted” markdown sponsor contract, to help. We also explore the implementations of other contracts to overcome the moral hazard, like virtual buyback with inventory reallocation contract, and wholesale pricing contract with side payments.

Short bio: Dr Tsan-Ming Choi (Jason) is currently Professor of Fashion Business at The Hong Kong Polytechnic University (PolyU). Over the past decade, he has actively participated in a variety of research projects on fashion supply chain management and applied optimization. He has authored/edited 16 research handbooks and published extensively in Web of Science listed citation journals, including Production and Operations Management, Journal of Operations Management, Naval Research Logistics, Transportation Research Part B, Transportation Research Part E, Automatica, Decision Sciences, EJOR, and over 50 papers in various high impact IEEE Transactions (TAC, TASE, TCYB, TEM, TIE, TII, TITS, TSMCS). He is now serving as the Co-Editor-in-Chief of Transportation Research Part E, a senior editor of Production and Operations Management, and Decision Support Systems, an associate editor of IEEE Transactions on Systems, Man, and Cybernetics - Systems, and an editorial board member of Clothing and Textiles Research Journal, International Journal of Production Economics, International Journal of Production Research, Journal of Fashion Marketing and Management, etc. He received the PolyU-President’s Award of Outstanding Performance in 2008, and the Best Associate Editor Award of IEEE Systems, Man, and Cybernetics Society in two consecutive years (2013 and 2014). He is currently a member of the engineering panel of Research Grants Council (Hong Kong).

