

Author's Accepted Manuscript

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www.elsevier.com/locate/ijpe

PII: S0925-5273(17)30031-2
DOI: <http://dx.doi.org/10.1016/j.ijpe.2017.02.002>
Reference: PROECO6651

To appear in: *Intern. Journal of Production Economics*

Received date: 20 July 2016
Revised date: 24 December 2016
Accepted date: 1 February 2017

Cite this article as: Xiang Wan and Nadia R. Sanders, The Negative Impact of Product Variety: Forecast Bias, Inventory Levels, and the Role of Vertical Integration, *Intern. Journal of Production Economics* <http://dx.doi.org/10.1016/j.ijpe.2017.02.002>

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The Negative Impact of Product Variety: Forecast Bias, Inventory Levels, and the Role of Vertical Integration

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Abstract

Companies routinely increase product variety in order to enhance competitiveness and grow sales. Unfortunately, increasing product variety creates operational challenges and results in higher inventory levels. The large number SKUs deteriorate decision quality and can introduce forecast bias - the tendency to consistently over or under forecast – into the system, further exacerbating the inventory problem. In this study, we evaluate how firms can increase product variety while managing inventory levels. Using balanced panel data collected from 283 distribution centers over 26 continuous four-week periods, we empirically test the mediation relationship of forecast bias on inventory levels. We find support for this relationship and show that firms can mitigate the negative effect of product variety on inventory levels by using strategies to reduce forecast bias. We then explore this relationship pre and post vertical integration, allowing us to test the impact of organizational change. Vertical integration creates opportunities for information sharing, lowering the uncertainty that may contribute to forecast bias. We find that the relationship is indeed moderated by vertical integration, suggesting that many of the operational challenges of increasing product variety can be improved through information transparency and coordination with supply chain partners. Collectively these

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