Chapter 1
Product Deletion and Sustainable Supply Chains

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ABSTRACT
Products and their associated material, capital, and information are critical flows within supply chains. Supply chain management needs to facilitate product portfolio management. Some example activities include material sourcing, product design and manufacture, product delivery and transportation, product usage, and service. Closing the supply-chain loop, especially for sustainable supply chains, include end-of-life disposal and repurposing activities. Sustainable supply chain development typically focuses on three major dimensions of organizational competitiveness, economic, social, and environmental. Organizations make product deletion continuously. These decisions can profoundly contribute to sustainability. Alternatively, sustainability performance of various supply chain process and product or material flows may also be strategic product deletion reasons. This chapter will review the integration of product deletion with sustainable supply chain management. It will entail the impact of product deletion on sustainable supply chains.

INTRODUCTION
Product management is critical for companies. The past few decades have witnessed dramatic growth in product development and innovations in product category, design
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and other variates. Continuous organizational product addition and product portfolio growth does not translate to profit margin increase. Considering the amount of resources and managerial effort for large product portfolio management, product addition may present a U-shape relationship to firm profit. Highly diverse product portfolios, though, enable firms to satisfy various needs, especially with highly heterogeneous consumer markets. Critically, these larger product families will likely drain resources and capabilities away from profitable products. Large companies often lose track of managing their product portfolio dynamics; not to mention small and medium sized companies with limited resources.

Yet today, product deletion has remained a neglected topic within business research. Existing literature has extensively investigated product addition related decisions, including product line extensions, product proliferation, product innovation, and new product development. Product deletion often occurs in a product’s decline stage of its life cycle. It is a viewed as relatively less appealing decision and area of focus to both academics and practitioners. But it can have deep and pervasive competitive implications (Zhu et al., 2018). Product deletion’s impact on firm performance, an intuitive while complex relationship, calls for systematic and in-depth investigation.

Firms compete as supply chains today. Products are critical flows on supply chains and supply chains are designed around products. Product deletion decisions have profound implications on supply chains and supply chain performance measurements. These implications should be included in product deletion decision making.

Eliminating or withdrawing weakly performing products from a firm’s product portfolio will result in a rationalized product portfolio with lower resources consumption, labor usage, as well as emissions and waste (Bai et al., 2018) on supply chains. The leaner a product portfolio, the more environmentally friendly and socially responsible its supply chain may become. A more rationalized product portfolio will open operational capacity and yield; potentially it will lead efficiency and economic competitiveness. Keeping a low level of product variety, firms can concentrate resources including capital, people and technology to core products, which will enhance the product performance in quality and service and further influence firm image and identity in its market segments.

Sustainability may also cause a product to be deleted (Zhu & Shah, 2018). When economic sustainability of a product portfolio becomes tight, given the restricted amount of financial resources, the firm might consider cutting products that are capital intensive but revenue shrinking. When certain products yield social concerns, for example, products outsourced to locations with child labor issues overseas, firms may delete these products. When some products lead greater hazardous wastes, consumption of depleted resources, or cause other environmental burdens due to growing material consumption, the product might be deleted with green and pro-environmental substitutes.
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