

USING POSTPONEMENT STRATEGIES TO REDUCE PLANNING UNCERTAINTY IN MEAT SUPPLY CHAINS

Willem Rijkema, Jack van der Vorst, Roberto Rossi

Wageningen University, Logistics, Decisions and Information Sciences Group,

The Netherlands, Tel. 31 (317) 485644; Fax +31 (317) 485646

Wageningen University, Hollandseweg 1, 6706 KN Wageningen, The Netherlands,

E-mail: Willem.rijkema@wur.nl

Abstract

Purpose: *Postponement* is a management concept that refers to the delay of activities until more information on supply or demand is available in order to reduce cost and improve customer service. This concept receives continuous attention in both literature and practice (van Hoek 2001; Boone, Craighead et al. 2007; Akkerman, van der Meer et al. 2009). It is closely related to the use of so-called *product differentiation points* (Yang and Burns 2003), which should be used to separate postponable customer specific activities from non-customer specific activities. Postponing the customer specific activities allows companies to cope better with uncertainty, because additional information that is collected during the delay reduces uncertainty. Yang, Burns et al. (2004) suggest a variety of postponement strategies depending on the degree of demand uncertainty and level of product modularisation. In a literature review on postponement, Boone, Craighead et al. (2007) identified a number of research challenges that need further attention; an important one is using postponement strategies to reduce planning uncertainty in supply chains with high supply uncertainty. This paper addresses this challenge and presents the results of a case study on effective postponement strategies in meat supply chains.

Research approach: Logistics planning in the meat industry has to cope with several specific supply, demand and product quality characteristics. Meat quality comprises of a variety of features, some of which change over time (e.g. microbiological quality). Differences in farmer production systems result in heterogeneity in supplied meat quality features and thus high supply uncertainty. Furthermore, market segments differ in demand patterns, preferred logistics services, and demand for specific product quality features (e.g. Asia prefers fat meat products, Greece prefers light and lean carcasses). The combination of these factors makes logistics planning in this industry challenging, resulting in inefficiency in matching raw materials with demanded end products (van der Vorst, Dijk et al. 2001; Perez, de Castro et al. 2009). Recent developments in ICT and sensory technology have improved the means to manage logistics flows and enable new postponement strategies in meat supply chains.

After a literature review on postponement strategies, a case study is presented of a pork production chain in which the effectiveness of alternative postponement strategies is assessed. Results of process analyses, expert interviews and data analyses are given.

Findings and Originality: The paper takes the research challenge given by Boone, Craighead et al. (2007) to assess the applicability of postponement strategies in supply chains with high planning and supply uncertainty. Case results show that reconfiguring product differentiation points in the supply chain can reduce planning uncertainty and operational inefficiencies.

Research impact: This paper extends the body of knowledge on effective postponement strategies in new types of supply chains. We provide a case study example of postponement in the meat industry as a means to reduce planning uncertainty.

Practical impact: With this case study we propose and assess an alternative supply chain design, in which product differentiation is postponed. By doing so, we provide an example of postponement strategies in the meat industry to reduce planning uncertainty, improve product yield and boost perceived product quality.

Keywords: Postponement, product differentiation points, pork processing, uncertainty

References:

- Akkerman, R., D. van der Meer, et al. (in press). "Make to stock and mix to order: choosing intermediate products in the food-processing industry." International Journal of Production Research:
- Boone, C. A., C. W. Craighead, et al. (2007). "Postponement: an evolving supply chain concept." International Journal of Physical Distribution & Logistics Management **37**(8): 594-611.
- Perez, C., R. de Castro, et al. (2009). "The pork industry: a supply chain perspective." British Food Journal **111**(3): 257-274.
- van der Vorst, J. G. A. J., S. J. v. Dijk, et al. (2001). "Leagile supply chain design in the food industry - using decoupling points in an inflexible poultry supply chain with high demand uncertainty -." The International Journal on Logistics Management **12**(2): 73-86.
- van Hoek, R. I. (2001). "The rediscovery of postponement a literature review and directions for research." Journal of Operations Management **19**(2): 161-184.
- Yang, B. and N. D. Burns (2003). "Implications of postponement for the supply chain." International Journal of Production Research **41**(9): 2075-2090.
- Yang, B., N. D. Burns, et al. (2004). "Postponement: a review and an integrated framework." International Journal of Operations & Production Management **24**(5): 468-487.