Aalborg Universitet

AALBORG UNIVERSITY
DENMARK

What and how about customer-driven product development

Sommer, Anita Friis; Steger-Jensen, Kenn

Published in:
Proceedings of the 4th Production and Operations Management Conference / 19th International Annual EurOMA Conference

Publication date:
2012

Document Version
Accepted author manuscript, peer reviewed version

Link to publication from Aalborg University

Citation for published version (APA):
Sommer, A. F., & Steger-Jensen, K. (2012). What and how about customer-driven product development. In P. Dirk Van Donk, R. De Koster, S. De Leeuw, J. Fransoo, & J. Van der Veen (Eds.), *Proceedings of the 4th Production and Operations Management Conference / 19th International Annual EurOMA Conference: Serving the World* EurOMA.

General rights
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

Take down policy
If you believe that this document breaches copyright please contact us at vbn@aub.aau.dk providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from vbn.aau.dk on: May 10, 2024

What and how about customer-driven product development

Anita Friis Sommer (sommer@m-tech.aau.dk) & Kenn Steger-Jensen, Aalborg University, Center for Logistics, 9220, Aalborg, Denmark

Abstract

Collaborative product development is of increasing interest for manufacturing industry as customer demands increases while product life cycles decrease. This study investigates how suppliers managing active customer requests for new products and customer-driven product development. A large structured literature review of the top 20 supply chain management journals is conducted to explore existing literature. Research states the importance of active integration of costumers in product development, but does not provide answers to how suppliers can manage this in practice. A 2x2 matrix is developed describing the differing views on customers in existing research including customer actions on both new and existing products.

Keywords: customer-driven product development, collaborative product development, supply chain integration.

Introduction

Product development is a research area with a long history within supply chain management research streams including collaborative and integrated product development in buyer-supplier relationships (Hilletofth and Eriksson 2011; Jiao et al. 2007; Juttner et al. 2006; Krishnan and Ulrich 2001; Stavrulaki and Davis 2010). These research streams highlights the increasing importance of including customers in product development, which is a way to gain competitive advantage in demanding markets with decreasing product life cycles. However, in current research there is seemingly a lack of research on how to manage collaborative product development from the supplier's side, where a customer has initiated new product development with a specific request. Today competition has increased the use of outsourcing and focus on core competencies. In this situation, customers are increasingly contacting their suppliers with new product requests. An important capability to gain competiveness on future market is to be able to develop and managing this demand business process effectively. In this study the term 'Customer-Driven Product Development' (CDPD) is used when customer requests initiate collaborative product development. The purpose of this research study is to investigate customer-driven product development from the supplier's side and identify potential research gaps.

Customer-driven Product Development

To view product development as a process initiated by the customer going upstream in the supply chain and managing this process in the focal firm requires the holistic view which is dominant in the supply chain management research stream (Tracey 2004). In this research study it is viewed as one of the supply chain business processes (Lambert and Cooper 2000) and the Customer-Driven Product Development CDPD is viewed as a

distinct but joint instance of two of these business processes namely customer service and product development and commercialization, which is here termed request management process. The channel is based on the customer service, but the competence to handling the product develop request is in product development and commercialization. Practically this combined process and based on the channel for customer service, is of interest. In Make-To-Stock (MTS) environment the main customer interaction is in the order management process, but within this process customer integration is very low, given the final inventory as the customers de-couple point. This setup of process do not handling the product develop request compared to Make-To-Order (MTO) environment, which as part of the order management process handles this Customer-Driven Product Development activity as a naturally part and the customer integration is very high.

To construct a suitable structured literature review it is central to understand the key elements of CDPD, to include all relevant research on the subject. ReQuest Management (RQM) is for this purpose defined as managing customer requests for new products at a supplying company. The accepted requests are developed in collaboration with the specific customer, and thus the second element in CDPD is collaborative product development. Collaborative product development is defined as two or more supply chain members collaborating on product development. Collaborative product development has previously been considered in new product development literature, however either the main focus is from the customer's point of view (Brockhoff 2003; Fliess and Becker 2005; Johnsen and Ford 2007; Lee et al. 2008; Ritter and Walter 2003) or collaborative product development is viewed as driven by the supplier (Bailetti 1995; Jou et al. 2010; Tan and Tracey 2007; Yamashina et al. 2002) . There seems to be only little research concerned with how suppliers manage customer requests for new products and how a customer-initiated product development process is managed at the supplying company. The objective of this research study is to examine customer-driven product development from the supplier's side, and identify the existing scientific findings including research gaps within this research topic.

Method - structured literature review

Supply Chain Management (SCM) literature has been chosen for this review since 'the supply chain management approach to business incorporates new product development as a critical component and provides support for a collaborative product development approach where additional participation from parties such as manufacturing, purchasing, logistics, suppliers and customers is endorsed.'(Tracey 2004). Product development across the organization is also regarded by Lambert & Cooper (2000) to be one a key supply chain business processes (Lambert and Cooper 2000). The top 20 supply chain management journals have been chosen for the literature review (Arlbjørn et al. 2011; Charvet et al. 2008). Since there are many different definitions and terms used in this area, the search in the 20 journals was chosen to be broad including all articles including 'customer' AND 'product' in all text except full text, in order to ensure inclusion of all relevant articles in the first review round. This choice resulted in a total of 1030 hits. This number was delimited into a more appropriate sample of articles by reviewing abstracts using a set of exclusion criteria. After the exclusion round, a total of 129 papers remained. These were all read through for relevance to the research question, and additionally 57 papers were omitted based on the exclusion criteria, leaving 72 relevant articles. The

sources of relevant articles where dispersed across 14 of the 20 reviewed journals but with two main sources contributing 10 or more papers. The most influential journals on this topic are: Industrial Marketing Management and International Journal of Production Research.

Analysis and Results

During the review no articles were found on how suppliers manage customer-driven product development. Most of the included research implicitly regards customers as passive in the sense that the supplier should contact and/or engage the customer to develop a set of attributes to be used in product development. For instance by using tools like Quality Function Deployment (QFD) or New Product Development (NPD) processes, where customer needs are regarded as attributes (Cristiano 2000; Piedras 2006; Shum and Lin 2007; Yamashina et al. 2002). In this way the customer is not actively involved in the product development process even though it is termed collaborative or integrated product development. At the same time a major part of the research including active customers was focused on demand of existing products for instance within demand chain management research (Canever et al. 2008; Croxton et al. 2002; Heikkilä 2002). Research on existing products with active customers dominantly use the term customer demand to describe customer involvement (Canever et al. 2008), when the customer is passive it is generally regarded as customer value (Daniels 2000; Evans 2002). For new products the passive customers are involved through assessing customer needs (Kärkkäinen and Elfvengren 2002; Shum and Lin 2007) and if the customer is active it is through a customer request (Kumar and Wellbrock 2009). A 2x2 matrix has been designed to develop an overview of the different types of customer involvement depending on customer action and product see Figure 1.

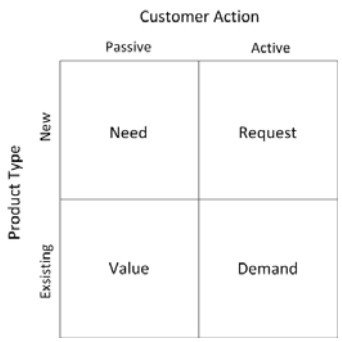

Figure 1 Customer Involvement Matrix

Since customer-driven product development implies active customers this segment is of primary interest. The research viewpoint for active customers was found to be either from a supplier, customer, or supply chain perspective. Therefore, the results, depicted in Table 1, has been divided according to customer action, product type and research viewpoint.

A major part of the research articles in this review include customers in new product development as passive attributes, which is also clearly highlighted through Table 2.

Customer needs are included as for instance desired product functionality, quality, design or configuration options.

Table 1 Overview of the reviewed articles divided by customer action, product type and research viewpoint.

Customer action	Product type	Research viewpoint	Articles
Passive	New	-	(Balachandra 2000; Carbonellfoulquie 2004; Croxton et al. 2002; Ellram et al. 2007; Govers 1996; Graber 1996; Herrmann et al. 2000; Hilletofth and Eriksson 2011; Hong et al. 2010; Jayaram and Malhotra 2010; Jou et al. 2010; X. Koufteros et al. 2005; Krishnan and Ulrich 2001; Kumar and Wellbrock 2009; Kärkkäinen and Elfvengren 2002; Lee et al. 2008; Morash et al. 1996; Naveh 2005; Piedras 2006; Rauniar et al. 2008; Rogers et al. 2004; Sabath 2004; Salvador and Forza 2004; Shamsuzzoha et al. 2009; Shum and Lin 2007; Simatupang and Sridharan 2002; Xie et al. 2005; Yamashina et al. 2002; Zirger 1990)
Active	Existing	customers viewpoint	(Ounnar et al. 2007)
	Existing	suppliers viewpoint	(Byrne and Heavey 2006; Čater and Čater 2010; Childerhouse et al. 2002; Hendry 1993; Hilletofth et al. 2009; Juttner et al. 2006; U. Jüttner et al. 2006; Kingsman et al. 1996; Storey et al. 2005; Zorzini et al. 2008)
	New	Lead users collaborating in product development	(Cooper 1996; Kristensen 1992; Tan and Tracey 2007)
	New	NPD collaboration partner, viewed from the customer's viewpoint	(Fliess and Becker 2005; Johnsen and Ford 2007; Labro 2006; Maylor 1997; Twigg 1998; Wang et al. 2009)
	New	NPD collaboration partner, viewed from the supplier's viewpoint	(Bonner 2010; Comer 1997; X. A. Koufteros et al. 2010; Mishra and Shah 2009; Parker 2000; Terwiesch and Loch 2004; Tracey 2004)
	New	Partner in the Supply chain. Supply chain viewpoint.	(Bagchi et al. 2005; Hald et al. 2009; Holmström et al. 2002; Holmström et al. 2006; Uta Jüttner et al. 2010; Khan and Creazza 2009; Soosay et al. 2008)
Unclear / not considered	-	-	(Fabbe-Costes and Jahre 2007, 2008; Feng et al. 2010; Gokpinar et al. 2010; Stavrulaki and Davis 2010; Stonebraker and Liao 2006)

These data are collected from the market through market analysis and compared to the production options of the company. In this view the customer is a passive participant in product development. Methods have been developed to formalize this form of New Product Development (NPD) where one of the most dominant the last 20 years is Quality Function Deployment (QFD) (Bottani and Rizzi 2006; Govers 1996; Yamashina et al. 2002). Inspired by von Hippel (1986) and innovation literature it has received increasing attention in recent years how to include lead users in new product development (Cooper 1996; Kristensen 1992; Tan and Tracey 2007). Especially within innovation literature, it

has been found central to product innovation success to include lead users in the innovation process. In situations where lead users are included in NPD, it is the supplying company that initiates the product development process and contacts lead users asking for their collaboration. Hence, the process is not customer initiated even though users are included in the process. Lead users are typically involved in late steps of the innovation process to give feedback to the developed products. However, the customer is not a collaboration partner, and the situation is far from customer-driven product development, where customers initiate product development through requests for new products and are afterwards actively engaged in the process. Including lead users in product development does not entail an equal collaboration relationship, and lead users are not considered partners in joint product development but are rather speech persons for the marketplace.

Through the analysis only seven articles were found on collaborative product development where B2B customers are viewed as actively involved as collaboration partners throughout the product development process. Four of the identified articles are quantitative research studies using surveys to investigating the relevance of customer integration/collaboration in new product development (Bonner 2010; X. A. Koufteros et al. 2010; Mishra and Shah 2009; Tracey 2004). All four conclude that it is in some way beneficial for the supplying company to include customers actively in collaborative product development. The measures of interest include market success, product newness, product performance and organizational performance. The most interesting study is by Bonner (2010), where it is stated that a high degree of customer interactivity will promote learning during the product development process, and when dealing with hard-to-articulate knowledge the product outcome will better match the actual customer needs. This supports the customer-driven product development approach arguing that customer needs are better met when customers are actively engaged in the development process. The article by Terwiesch & Loch (2004) supports the viewpoint that customers have difficulty articulating their needs and offers collaborative prototyping as a solution proposal. The viewpoints by Bonner (2010) are also supported by an older single case study by Corner (1997) where a joint product development case is investigated.

Discussion

During the research study it was identified that only little effort has been made to understand how suppliers can collaborate with actively engaged customers in new product development. Prescriptive models exists to guide companies to collaborate with customers, but these models focus on the supplier as the initiator of ideas and often the customer is a source of passive information and not viewed as an active collaboration partner. Interestingly, the perspective is reversed in research from the customer's side of joint product development. In these research studies, the B2B customer is found to be the initiating active part engaging in supplier collaboration on new products (Fliess and Becker 2005). The reviewed articles on the supplier's side of collaborative product development are mostly concerned with testing hypothesis of the relevance of close customer collaboration in new product development. All research findings from these survey studies agree that there is a positive relation between market success and close collaboration both internally and together with customers. The measures of the studies might be different, but the foundation is similar. They clearly state that there are positive benefits from collaborating closely with customers and it is argued that it is insufficient to

regard customers as lead users or passive attributes in new product development. The benefits are related to close interaction during the entire product development process in a partner relationship more than detached connections. The relevance has been identified, but curiously this has not led to any prescriptive studies within supply chain management on how suppliers should manage such interaction processes. One explanation might be found by looking into other research areas for possible answers. The research area of New Product Development (NPD) seems to have a similar focus as SCM on the supplier as the active part and the customer as inactive in NPD-projects (Atuahene Gima and Wei 2011; Brettel et al. 2011). Recent articles within NPD highlight the need to include customer needs in a more dynamic way, but customers still seem to be passive rather than being the initiator or at least an active participant (Biemans et al. 2007; Fuchs and Schreier 2010; Menguc and Auh 2010; Un et al. 2010). Within innovation literature the lead user principle is dominant, and does entail including active customers in NPD projects (Muller et al. 2005; von Hippel 1988). However as Sandmeier (2008) identified, most of these studies on customer integration in new product development has a focus on end-user/consumer integration (Sandmeier 2008) and does not consider the customer-driven aspects.

Conclusion

Customer-driven product development is currently an under-researched topic within supply chain management. Collaborating actively with customers on new product development has been identified as a competitive factor given several different criteria including product performance and project efficiency. However, there is a lack of prescriptive studies on collaborative product development from the supplier's side especially where the customer is the driver of the process. A 2x2 matrix was developed to differentiate between four different ways for suppliers to involve customers depending on whether the product is an existing or new product and the customer is passive or active, which was subsequently used to structure the review results. The analysis showed that current research on product development within supply chain management is primarily focused on passive customers where customer needs are collected through market analysis and then included as attributes in the product development process, whereas product development initiated by customers requesting for new products has not been investigated so far.

References

Arlbjørn, J.S., de Haas, H., and Munksgaard, K.B. [2011], 'Exploring supply chain innovation', *Logistics Research,* Vol., pp. 1-16.

Atuahene Gima, K. and Wei, Y.S. [2011], 'The Vital Role of Problem Solving Competence in New Product Success*', *Journal of Product Innovation Management,* Vol. 28, No. 1, pp. 81-98.

Bagchi, Prabir K., et al. [2005], 'Supply chain integration: a European survey', *The International Journal of Logistics Management,* Vol. 16, No. 2, pp. 275-94.

Bailetti, Antonio J. Litva [1995], 'Integrating Customer Requirements into Product Designs', *Journal of Product Innovation Management,* Vol., No. 1, pp. 3-15.

Balachandra, R. [2000], 'An expert system for new product development projects', *Industrial Management & Data Systems,* Vol. 100, No. 7, pp. 317-24.

Biemans, Wim, Griffin, Abbie, and Moenaert, Rudy [2007], 'Twenty Years of the Journal of Product Innovation Management: History, Participants, and Knowledge Stock and Flows', *Journal of Product Innovation Management,* Vol. 24, No. 3, pp. 193-213.

Bonner, Joseph M. [2010], 'Customer interactivity and new product performance: Moderating effects of product newness and product embeddedness', *Industrial Marketing Management,* Vol. 39, No. 3, pp. 485-92.
Bottani, E. and Rizzi, A. [2006], 'Strategic management of logistics service: A fuzzy QFD approach', *International Journal of Production Economics,* Vol. 103, No. 2, pp. 585-99.
Brettel, M., et al. [2011], 'Cross Functional Integration of R&D, Marketing, and Manufacturing in Radical and Incremental Product Innovations and Its Effects on Project Effectiveness and Efficiency', *Journal of Product Innovation Management,* Vol. 28, No. 2, pp. 251-69.
Brockhoff, Klaus [2003], 'Customers' perspectives of involvement in new product development', *International Journal of Technology Management,* Vol. 26, No. 5, pp. 464-81.
Byrne, P. J. and Heavey, C. [2006], 'The impact of information sharing and forecasting in capacitated industrial supply chains: A case study', *International Journal of Production Economics,* Vol. 103, No. 1, pp. 420-37.
Canever, Mario Duarte, Hans C. M. Van Trijp, and George Beers [2008], 'The emergent demand chain management', *Supply Chain Management, An international journal,* Vol., No. 2, pp. 104-15.
Carbonellfoulquie, P. [2004], 'Criteria employed for go/no-go decisions when developing successful highly innovative products', *Industrial Marketing Management,* Vol. 33, No. 4, pp. 307-16.
Čater, Tomaž and Čater, Barbara [2010], 'Product and relationship quality influence on customer commitment and loyalty in B2B manufacturing relationships', *Industrial Marketing Management,* Vol. 39, No. 8, pp. 1321-33.
Charvet, François F., Cooper, Martha C., and Gardner, John T. [2008], 'The Intellectual Structure of Supply Chain Management: a Bibliometric Approach', *Journal of Business Logistics,* Vol. 29, No. 1, pp. 47-73.
Childerhouse, P., Aitken, J., and Towill, D.R. [2002], 'Analysis and design of focused demand chains', *Journal of Operations Management,* Vol. 20, No. 6, pp. 675-89.
Comer, James M. Zirger [1997], 'Building a Supplier-Customer Relationship Using Joint New Product Development', *Industrial Marketing Management,* Vol., No. 2, pp. 203-11.
Cooper, Robert G. [1996], 'Overhauling the New Product Process', *Industrial Marketing Management,* Vol. 25, pp. 465-82.
Cristiano, John J. Liker [2000], 'Customer-Driven Product Development Through Quality Function Deployment in the U.S. and Japan', *Journal of Product Innovation Management,* Vol., No. 4, pp. 286-308.
Croxton, Keely L., et al. [2002], 'The demand management process', *The International Journal of Logistics Management,* Vol. 13, No. 2, pp. 51-66.
Daniels, Shirley [2000], 'Customer value management', *Work Study,* Vol. 49, No. 2, pp. 67-70.
Ellram, Lisa M., Tate, Wendy L., and Carter, Craig R. [2007], 'Product-process-supply chain: an integrative approach to three-dimensional concurrent engineering', *International Journal of Physical Distribution & Logistics Management,* Vol. 37, No. 4, pp. 305-30.
Evans, George [2002], 'Measuring and managing customer value', *Work Study,* Vol. 51, No. 3, pp. 134-39.
Fabbe-Costes, Nathalie and Jahre, Marianne [2007], 'Supply chain integration improves performance: the Emperor's new suit?', *International Journal of Physical Distribution & Logistics Management,* Vol. 37, No. 10, pp. 835-55.
Fabbe-Costes, Nathalie and Jahre, Marianne [2008], 'Supply chain integration and performance: a review of the evidence', *The International Journal of Logistics Management,* Vol. 19, No. 2, pp. 130-54.
Feng, Taiwen, Sun, Linyan, and Zhang, Ying [2010], 'The effects of customer and supplier involvement on competitive advantage: An empirical study in China', *Industrial Marketing Management,* Vol. 39, No. 8, pp. 1384-94.
Fliess, S. and Becker, U. [2005], 'Supplier integration—Controlling of co-development processes', *Industrial Marketing Management,* Vol., No. 1, pp. 28-44.
Fuchs, C. and Schreier, M. [2010], 'Customer empowerment in new product development', *Journal of Product Innovation Management,* Vol. 28, No. 1, pp. 17-32.

Gokpinar, B., Hopp, W. J., and Iravani, S. M. R. [2010], 'The Impact of Misalignment of Organizational Structure and Product Architecture on Quality in Complex Product Development', *Management Science,* Vol. 56, No. 3, pp. 468-84.
Govers, C. P. M. [1996], 'What and how about quality function deployment (QFD)', *International Journal of Production Economics,* Vol. 46-47, No. Journal Article, pp. 575-85.
Graber, Don R. [1996], 'How to Manage a Global Product Development Process', *Industrial Marketing Management,* Vol. 25, pp. 483-89.
Hald, Kim Sundtoft, Cordón, Carlos, and Vollmann, Thomas E. [2009], 'Towards an understanding of attraction in buyer–supplier relationships', *Industrial Marketing Management,* Vol. 38, No. 8, pp. 960-70.
Heikkilä, J. [2002], 'From supply to demand chain management: efficiency and customer satisfaction', *Journal of Operations Management,* Vol. 20, No. 6, pp. 747-67.
Hendry, Linda, C. [1993], 'COPP: A Decision Support System for Managing Customer Enquiries', *International Journal of Operations & Production Management,* Vol. 12, No. 11, pp. 53-64.
Herrmann, A., Huber, F., and Braunstein, C. [2000], 'Market-driven product and service design: Bridging the gap between customer needs, quality management, and customer satisfaction', *International Journal of Production Economics,* Vol. 66, No. 1, pp. 77-96.
Hilletofth, Per and Eriksson, M. D. [2011], 'Coordinating new product development with supply chain management', *Industrial Management & Data Systems,* Vol. 111, No. 2, pp. 6-6.
Hilletofth, Per, Ericsson, Dag, and Christopher, Martin [2009], 'Demand chain management: a Swedish industrial case study', *Industrial Management & Data Systems,* Vol. 109, No. 9, pp. 1179-96.
Holmström, Jan, et al. [2006], 'Managing product introductions across the supply chain: findings from a development project', *Supply Chain Management: An International Journal,* Vol. 11, No. 2, pp. 121-30.
Holmström, Jan, et al. [2002], 'Implementing Collaboration Process Networks', *The International Journal of Logistics Management,* Vol. 13, No. 2, pp. 39-50.
Hong, G., et al. [2010], 'Optimal concurrent product design and process planning based on the requirements of individual customers in one-of-a-kind production', *International Journal of Production Research,* Vol. 48, No. 21, pp. 6341-66.
Jayaram, Jayanth and Malhotra, Manoj K. [2010], 'The Differential and Contingent Impact of Concurrency on New Product Development Project Performance: A Holistic Examination', *Decision Sciences,* Vol. 41, No. 1, pp. 147-96.
Jiao, Jianxin, Simpson, Timothy W., and Siddique, Zahed [2007], 'Product family design and platform-based product development: a state-of-the-art review', *Journal of Intelligent Manufacturing,* Vol. 18, No. 1, pp. 5-29.
Johnsen, T. and Ford, D. [2007], 'Customer approaches to product development with suppliers', *Industrial Marketing Management,* Vol. 36, No. 3, pp. 300-08.
Jou, Y. T., et al. [2010], 'A study on the improvements of new product development procedure performance–an application of design for Six Sigma in a semi-conductor equipment manufacturer', *International Journal of Production Research,* Vol. 48, No. 19, pp. 5573 - 91.
Juttner, U., Godsell, J., and Christopher, M. [2006], 'Demand chain alignment competence — delivering value through product life cycle management', *Industrial Marketing Management,* Vol. 35, No. 8, pp. 989-1001.
Jüttner, U., Christopher, M., and Baker, S. [2006], 'Demand chain management-integrating marketing and supply chain management', *Industrial Marketing Management,* Vol. 36, No. 3, pp. 377-92.
Jüttner, Uta, Christopher, Martin, and Godsell, Janet [2010], 'A strategic framework for integrating marketing and supply chain strategies', *The International Journal of Logistics Management,* Vol. 21, No. 1, pp. 104-26.
Khan, Omera and Creazza, Alessandro [2009], 'Managing the product design-supply chain interface: Towards a roadmap to the "design centric business"', *International Journal of Physical Distribution & Logistics Management,* Vol. 39, No. 4, pp. 301-19.

Kingsman, B., et al. [1996], 'Responding to customer enquiries in make-to-order companies Problems and solutions', *International Journal of Production Economics,* Vol. 46-47, No. Journal Article, pp. 219-31.
Koufteros, Xenophon, Vonderembse, Mark, and Jayaram, Jayanth [2005], 'Internal and External Integration for Product Development: The Contingency Effects of Uncertainty, Equivocality, and Platform Strategy', *Decision Sciences,* Vol. 36, No. 1, pp. 97-133.
Koufteros, Xenophon A., Rawski, Greg E., and Rupak, Rauniar [2010], 'Organizational Integration for Product Development: The Effects on Glitches, On-Time Execution of Engineering Change Orders, and Market Success', *Decision Sciences,* Vol. 41, No. 1, pp. 49-80.
Krishnan, V. and Ulrich, Karl T. [2001], 'Product Development Decisions: A Review of the Literature', *Management Science,* Vol. 47, No. 1, pp. 1-1.
Kristensen, Preben Sander [1992], 'Flying Prototypes: Production Departments' Direct Interaction with External Customers', *International Journal of Operations & Production Management,* Vol. 12, No. 7, pp. 197-212.
Kumar, Sameer and Wellbrock, James [2009], 'Improved new product development through enhanced design architecture for engineer-to-order companies', *International Journal of Production Research,* Vol. 47, No. 15, pp. 4235-54.
Kärkkäinen, H. and Elfvengren, K. [2002], 'Role of careful customer need assessment in product innovation management - Empirical analysis', *International Journal of Production Economics,* Vol. 80, No. 1, pp. 85-103.
Labro, Eva [2006], 'Is a focus on collaborative product development warranted from a cost commitment perspective?', *Supply Chain Management: An International Journal,* Vol. 11, No. 6, pp. 503-09.
Lambert, D. M. and Cooper, M. C. [2000], 'Issues in Supply Chain Management', *Industrial Marketing Management,* Vol. 29, No. 1, pp. 65-83.
Lee, A. H. I., Chen, H. H., and Tong, Y. [2008], 'Developing new products in a network with efficiency and innovation', *International Journal of Production Research,* Vol. 46, No. 17, pp. 4687-707.
Maylor, Harvey [1997], 'Concurrent new product development: an empirical assessment', *International Journal of Operations & Production Management,* Vol. 17, No. 12, pp. 1196-214.
Menguc, Bulent and Auh, Seigyoung [2010], 'Development and return on execution of product innovation capabilities: The role of organizational structure', *Industrial Marketing Management,* Vol. 39, No. 5, pp. 820-31.
Mishra, Anant A. and Shah, Rachna [2009], 'In union lies strength: Collaborative competence in new product development and its performance effects', *Journal of Operations Management,* Vol. 27, No. 4, pp. 324-38.
Morash, Edward A., Dröge, Cornelia, and Vickery, Shawnee [1996], 'Boundary spanning interfaces between logistics, production, marketing and new product development', *International Journal of Physical Distribution & Logistics Management,* Vol. 26, No. 8, pp. 43-62.
Muller, Amy, Välikangas, Liisa, and Merlyn, Paul [2005], 'Metrics for innovation: guidelines for developing a customized suite of innovation metrics', *Strategy & Leadership,* Vol. 33, No. 1, pp. 37-45.
Naveh, E. [2005], 'The effect of integrated product development on efficiency and innovation', *International Journal of Production Research,* Vol. 43, No. 13, pp. 2789-808.
Ounnar, F., et al. [2007], 'Customer-supplier relationship management in an intelligent supply chain network', *Production Planning & Control,* Vol. 18, No. 5, pp. 377-87.
Parker, Hamieda [2000], 'Interfirm collaboration and the new product development process', *Industrial Management & Data Systems,* Vol. 100, No. 6, pp. 255-60.
Piedras, HugoYacout [2006], 'Concurrent optimization of customer requirements and the design of a new product', *International Journal of Production Research,* Vol., No. 20, pp. 4401-16.
Rauniar, Rupak, et al. [2008], 'The role of heavyweight product manager in new product development', *International Journal of Operations & Production Management,* Vol. 28, No. 2, pp. 130-54.

Ritter, Thomas and Walter, Achim [2003], 'Relationship-specific antecedents of customer involvement in new product development', *International Journal of Technology Management,* Vol. 26, No. 5, pp. 482-501.
Rogers, Dale S., Lambert, Douglas M., and Knemeyer, A. M. [2004], 'The Product Development and Commercialization Process', *The International Journal of Logistics Management,* Vol. 15, No. 1, pp. 43-56.
Sabath, Robert Whipple [2004], 'Using the Customer/product Action Matrix to Enhance Internal Collaboration', *Journal of Business Logistics,* Vol., No. 2, pp. 1-19.
Salvador, F. and Forza, C. [2004], 'Configuring products to address the customization-responsiveness squeeze: A survey of management issues and opportunities', *International Journal of Production Economics,* Vol. 91, No. 3, pp. 273-91.
Sandmeier, P. [2008], *Customer Integration in Industrial Innovation Projects* (Gabler Verlag).
Shamsuzzoha, Ahm, Kyllönen, Sami, and Helo, Petri [2009], 'Collaborative customized product development framework', *Industrial Management & Data Systems,* Vol. 109, No. 5, pp. 718-35.
Shum, Paul and Lin, Grier [2007], 'A world class new product development best practices model', *International Journal of Production Research,* Vol. 45, No. 7, pp. 1609-29.
Simatupang, Togar M. and Sridharan, R. [2002], 'The Collaborative Supply Chain', *The International Journal of Logistics Management,* Vol. 13, No. 1, pp. 15-30.
Soosay, Claudine A., Hyland, Paul W., and Ferrer, Mario [2008], 'Supply chain collaboration: capabilities for continuous innovation', *Supply Chain Management, An international journal,* Vol., No. 2, pp. 160-69.
Stavrulaki, Euthemia and Davis, Mark [2010], 'Aligning products with supply chain processes and strategy', *The International Journal of Logistics Management,* Vol. 21, No. 1, pp. 127-51.
Stonebraker, Peter W. and Liao, Jianwen [2006], 'Supply chain integration: exploring product and environmental contingencies', *Supply Chain Management: An International Journal,* Vol. 11, No. 1, pp. 34-43.
Storey, John, Emberson, Caroline, and Reade, David [2005], 'The barriers to customer responsive supply chain management', *International Journal of Operations & Production Management,* Vol. 25, No. 3, pp. 242-60.
Tan, Chong Leng and Tracey, Michael [2007], 'Collaborative New Product Development Environments: Implications for Supply Chain Management', *Journal of Supply Chain Management,* Vol. 43, No. 3, pp. 2-15.
Terwiesch, Christian and Loch, Christoph H. [2004], 'Collaborative Prototyping and the Pricing of Custom-Designed Products', *Management Science,* Vol. 50, No. 2, pp. 145-58.
Tracey, Michael [2004], 'A Holistic Approach to New Product Development', *Journal of Supply Chain Management,* Vol., No. 4, pp. 37-55.
Twigg, David [1998], 'Managing product development within a design chain', *International Journal of Operations & Production Management,* Vol. 18, No. 5, pp. 508-24.
Un, C. A., Cuervo-Cazurra, Alvaro, and Asakawa, Kazuhiro [2010], 'R&D Collaborations and Product Innovation', *Journal of Product Innovation Management,* Vol. 27, No. 5, pp. 673-89.
von Hippel, Erik [1988], *The Sources of Innovation* (New York: Oxford University Press).
Wang, Tsung-Li, et al. [2009], 'Development of a collaborative product development framework based on centre-satellite system and service-oriented architecture', *International Journal of Production Research,* Vol. 47, No. 20, pp. 5637-56.
Xie, S. Q., Xu, X., and Tu, Y. L. [2005], 'A reconfigurable platform in support of one-of-a-kind product development', *International Journal of Production Research,* Vol. 43, No. 9, pp. 1889-910.
Yamashina, Hajime, Ito, Takaaki, and Kawada, Hiroshi [2002], 'Innovative product development process by integrating QFD and TRIZ', *International Journal of Production Research,* Vol. 40, No. 5, pp. 1031-50.
Zirger, Billie JoMaidique [1990], 'A Model of New Product Development', *Management Science,* Vol., No. 7, pp. 867-83.
Zorzini, Marta, et al. [2008], 'Customer enquiry management and product customization: An empirical multi-case study analysis in the Italian capital goods sector', *International Journal of Operations & Production Management,* Vol. 28, No. 12, pp. 1186-218.