CIPS Procurement topic

Early Supplier Involvement (ESI)

Many leading companies are forming 'supply networks' in order to lock in the benefits of early supplier involvement (Economist Intelligence Unit, 2005)

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Introduction

Involving suppliers in cross-functional teams at the early stages of product development has strong roots in the Japanese automotive industry (Johnsen, 2009). Today ESI remains quite common in automotive and consumer electronics industries (Leenders et al., 2002). Many purchasing organisations view coordination with critical suppliers via ESI as important enablers to product, process and supply chain structure development and as a cost reduction exercise (Millson and Wilemon 2002). In addition, adopting ESI practices may offer additional benefits to organisations, including the management of supply risk in new product development and the upstream supply chain (Zsidisin and Smith, 2005). For a supplier, participation may be embedded in the already existing partnership or alliance with the manufacturer, or a way of securing the business (Leenders et al., 2002).

In ESI, gain and risk sharing agreements replace traditional negotiations and contracts that are primarily focused on purchasing price and quantities (Van Weele, 2010). This means that ESI leads to more long-term and close collaborative relationships between supply chain partners (Van Weele, 2010), and it is advocated as a mean of integrating supplier capabilities in the manufacturer's supply chain (Dowlatshahi, 1998).

For high-tech companies the cost of new product development is mostly determined in the design stage. These companies are no longer interested in 'one-off' event-based sourcing after new product introduction and are looking to optimise and monitor the critical path of a portfolio of new products. Some companies grade suppliers and classify them as new product development partners or preferred suppliers. If they do not fall into either of these categories, they are downgraded to transactional suppliers and have to earn their way back (Economist Intelligence Unit, 2005).

Definition

Early Supplier Involvement (ESI) is a form of vertical collaboration between supply chain partners in which the manufacturer involves the supplier at an early stage of the product development process (Mikkola and Skjott-Larsen, 2006; Van Weele, 2010).

Successful Application

Dowlatshahi (1998) developed a detailed conceptual framework for the implementation of ESI and suggested it had four main components: Design, Procurement, Suppliers and Manufacturing. Each component contains from seven to eleven action steps. For example, 'design' is concerned with conceptualising the product, reviewing sales forecasts, performing value analysis of parts, determining quality targets and defining the product performance range; 'procurement' involves make/buy decisions, price negotiation and determining safety stock levels; the 'suppliers' component is about improving quality controls at the supplier's factory, determining delivery standards and goals and R&D investment; and 'manufacturing' requires defining and discussing manufacturing product, determining throughput costs, evaluating set-up times, and setting production efficiency goals (Dowlatshahi, 1998).

Steps to Successful Application

- Generate an idea.

- Conceptualise and design product.
- Analyse make-buy decisions.
- Negotiate price, terms and conditions.
- Negotiate lead-times and inventory levels.
- Determine delivery standards and goals.
- Determine R&D investment.
- Define and discuss manufacturing process.
- Determine manufacturing metrics.

Dowlatshahi (1998)

Hints and Tips

- Supplier selection processes are an important success factor (Zsidisin and Smith, 2005). Johnsen (2009) suggests that suppliers of parts representing high value and complexity should be involved early. These suppliers need to be selected and evaluated according to their innovative capability and complementarity.
- There is a need for supplier relationship development and adaptation through the long-term process of integration between customers and suppliers. This development can include shared training, mutual trust, commitment, risk and reward sharing, agreed performance targets and measures, and supplier representation on the customer's product development team. These relationship-specific factors, frequently underestimated by managers, have been identified as critical success factors (Johnsen, 2009).
- Internal capabilities of the customer, in particular top management commitment and internal cross-functional coordination, are very important. The ability to manage supplier relationships begins by developing the ability to manage internal cross-functional relationships. Internal customer processes need to be developed to ensure that suppliers are selected and evaluated on the right basis and that ongoing trusting and committed supplier relationships are allowed to evolve (Johnsen, 2009; Van Weele, 2010).
- Having a formal plan and structure in place for the implementation of ESI is essential (Dowlatshahi, 1998).
- It is important to involve only suppliers with long-term relationships and partnerships (Dowlatshahi, 1998).

Potential Advantages

- Reduced product development cost (Bonaccorsi and Lipparini, 1994; Leenders et al., 2002; Mikkola and Skjott-Larsen, 2006).

- Reduced lead-times, faster time-to-market (Mikkola and Skjott-Larsen, 2006).
- Improved performance (Mikkola and Skjott-Larsen, 2006).

Potential Disadvantages

- In practice, many firms experience difficulties in managing the process, such as communication problems with the supply chain partner and the management of relationships (Mikkola and Skjott-Larsen, 2006). This is sometimes due to, among other things, a lack of inter-systems comparability (Van Weele, 2010).
- For the manufacturer, ESI imposes a risk of a possible loss of control over product design (Mikkola and Skjott-Larsen, 2006).
- The risk can be high if the manufacturer relies on a sole supplier in the development of a core component (e.g. risk of supplier's bankruptcy) (Mikkola and Skjott-Larsen, 2006).

Performance Monitoring

- Inventory Turnover Ratio (ITR) is a measure of whether inventory goals set for ESI are reached (Dowlatshahi, 1998)
- Process Design Standardisation Ratio (PDSR) is a measure of the effectiveness of the design programme (Dowlatshahi, 1998)
- Size of production runs (Dowlatshahi, 1998).
- Throughput cost (Dowlatshahi, 1998).
- Set-up times (Dowlatshahi, 1998).

Case Studies

- Oticon, a Danish manufacturer of hearing aids, successfully introduced a new product platform developed in cooperation with its suppliers. The latter jointly solved technical problems with the component's 'receiver' and 'connecting element' (Mikkola and Skjott-Larsen, 2006).
- The Antilock Braking System (ABS) was developed for Ford and GM by their suppliers Bosch and ITT-Teves in 1984. With time, other suppliers to car manufacturers got involved in developing this initially expensive product. As a result of this competition the share of cars with ABS increased from 1% in the 1980s to almost 100% in the 2000s (Veloso and Fixson, 2001).
- There has been a supplier dominance on the patents count related to the development of the Airbag, suppliers invested more in the development of the Airbag than did the manufacturers. At the beginning of 2000s more than 75% of the $6bn industry of airbags was supplied by a group of automotive suppliers, including Breed, Autoliv, Takata, and TRW

Further Reading/References

Web Resources

- 6 Early Supplier Involvement Tips http://www.nextlevelpurchasing.com/articles/early-supplier-involvement.html
- Achieve Successful Early Supplier Involvement http://ism2011.wordpress.com/2011/05/17/achieve-successful-early-supplier-involvement/
- Managing supplier integration in new product development http://www.iaccm.com/news/contractingexcellence/?storyid=905

Books

- The Supply Based Advantage, Stephen Rogers, ISBN 978-0814401552
- The New manufacturing Challenge, Kiyoshi Suzaki, ISBN 978-0029320402
- Developing Sourcing Capabilities, Bjorn Axelsson, Finn Wynstra and Franz Rozemeijer, ISBN 978-0470850121
- New Product Development, Robert M Monczka, Robert b Handfield, Thomas V Scannell, Gary L Ragatz & David J Frayer, ISBN 978-0873894685
- Excellence in Supplier Management, Stuart Emmett & Barry Crocker, ISBN 978-1903499467

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- Zsidisin, G. and Smith, M.E. (2005) Managing supply risk with early supplier involvement: A case study and research propositions. Journal of Supply Chain Management, Vol.41(4), pp.44-57.

- Johnsen, T.E. (2009) Supplier involvement in new product development and innovation: Taking stock and looking to the future. Journal of Purchasing and Supply Management, Vol.15(3), pp.187-197. (Veloso and Fixson, 2001).

Video

Pirelli's involvement in motor racing from the early 20th century until their return as Formula 1's official sole tyre supplier in 2011
https://www.youtube.com/watch?feature=player_embedded&v=N3Hw4udN50c

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