Chapter 79
Supply Chain Reengineering: A Case Study

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ABSTRACT

This chapter describes a debacle that occurred when a large assembler of fast moving consumer electronics commissioned the set up of a new supply chain. Four key players undertaking five processes were involved. These companies planned to operate sell-buy relationships. Upon starting to ramp-up of the first product component sets, it became clear that companies did not trust their successors to pay for all goods delivered. Similarly, suppliers were not trusted to deliver perfect goods. Companies receiving component sets refused liability for damage or defects introduced by companies further up the supply chain. A remedial quick-fix using centralised inspection at the principal supplier soon was adopted to facilitate supply of complete sets of mechanical parts to the assembler. Significant similarities exist between the case study supply chain and the concepts used in business process reengineering. The chapter identifies stages undertaken to improve an inbound supply chain for complex plastic mouldings assemblies. The principal research methods used were participant-observer and action orientation. All company names have been disguised to comply with confidentiality agreements. The author was a Logistics Project Leader during the period of this research. He acted as an internal consultant for Alpha Co, with responsibilities for encouraging new product development teams to modify the products to take into consideration 'design for logistics' concepts.

INTRODUCTION

Many writers suggest corporations are moving to procuring the majority of the value added manufacturing activities for their products. Large corporations focus on designs, process technology verification, designing for late configuration, undertaking assembly, testing, packing and distribution. High volume assemblers are reliant on predictable responsiveness to supply material sets to schedule. Failure of any one in-bound supply chain to deliver goods on-time and in the correct quantities jeopardises production.

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Assemblers may have alternative products that can be produced, supplied by alternate in-bound supply chains. Materials management at plants are using suppliers and supply chains that have been specified by new product development programmes. Procurement project leaders (PPLs) shall specify which companies shall be awarded which value-adding activities. PPLs typically track progress during ramp-up of production, working with materials management when in-bound flow or quality problems become apparent. As product ramp-up reaches full flow, PPLs may reduce their activities, in preparation of moving to new product development projects. However, if problems persist, PPLs must either move to expediting mode or focus on managing supplier' quality and response improvement. PPLs will have co-ordinated with operations process leaders (OPLs) individual company processes verified during prototype and pre-production runs. However, when the supply chains go live, each company that participates is dependent on their predecessors to produce high quality goods and in sufficient quantity that are delivered on-time.

Materials managers must feed their assembly plants. Plant managers may be offered a range of products to produce. Since their performance metrics focus on of manufacturing operations' productivity (efficiency, utilisation and downtime) and contribution to profit, assembly plant managers may choose which products they would like to produce – forcing new product development teams to sell internally their designs and process solutions to plant management. This choice is complicated by the rapid change in process capabilities of new and future products, by the product volume and by the frequency of line set-ups.

Research Methods

Two phases of research were undertaken; both were nine months in duration. The initial phase was to dedicated to re-defining the role of Logistics Project Leader (LPL). A group of LPLs already had been set up for high volume markets around the world. The researcher was the first person in the UK working for Alpha Co, to take this role. The market was Japan. This presented only very rudimentary sales and variant issues – a single mobile phone operator DoCoMo, with between two and six product variants. By contrast, other markets required significant numbers of product and packaging variants to be planned. The comparative simplicity of the LPL basic tasks enabled management to request that the tasks and role of an LPL be fundamentally re-evaluated by the researcher. The researcher was tasked with the development of the design for logistics concept and to create activity plans for LPLs to use in order that they aid new product development programmes to specify goods and services that take into account operations' requirements.

Basic research was undertaken to identify sources of data, applicable analysis methods and creation of decision support tools. Soon after recruitment, the researcher was sent on Manufacturing Appreciation Training at the main operations headquarters. All facets of product operations were reviewed and feedback provided to the training facilitators. Research was undertaken in the manufacturing centre to determine root causes of first time pass rates in test boxes for audio equipment. The researcher was made familiar with Alpha Co's supply chain concepts, control methods and management training materials. Modifications to these were proposed in order to facilitate more rapid and intuitive understanding of the design for logistics concept. A comprehensive supply chain game was developed and used with core and peripheral product designers in order to more effectively convey the design for logistics messages (Newlands 2009).

The second nine month research project focused on detailed analysis of the supply chain from suppliers through to the points of sale in Japan. Research was undertaken to determine the pipeline liability (Newlands and Hooper 2001) and causes of pipeline volatility (Newlands 2005).