

The customer of the future demands instant, but at the same time completely customized services. The ever growing need for individual project variety and tailored logistics are increasing complexities for the supply chain. The greatest challenge today is the accelerated rate of these changes. In order to tackle these problems, leading-edge companies have turned towards the application of mathematical modelling systems.

Improving efficiency

Let us assume that in our decisions we can rely on an experienced colleague who has worked at all levels of the supply chain. We know that most of the time the right decisions are made, and these decisions approach the optimal level in 90 percent of the cases. However, long-term decisions define the mid-term optimum and similarly, medium-term decisions impact on those taken at the short-term level. Consequently, if there is a lack of holistic optimization in the supply chain, it can lead to a loss of as much as 35 percent, even at the excellent rate of 90 percent decision efficiency. This fact was also highlighted by Gary Coleman, head of the Global Production Division at Deloitte, in a study in 2006, in which he claimed that companies are unable to realize even 50 percent of the potential results due to the lack of optimization.

Using the right tools

Holistic optimization requires flexible mathematical modelling systems. The world's leading mathematical modelling language is AIMMS, which is the only system encompassing the benefits of the most up-to-date mathematical tools and those of the database management systems. It can be seamlessly integrated while it allows for the required level of flexibility. Its unique ability is to include all those mathematical tools that can be applied in a volatile environment (scenario management, stochastic, robust optimization).

Applying the model

Supply chain optimization proved to be the solution for the SABMiller group when it aimed to improve the financial efficiency of its European supply chain operations. »During the optimization, we have identified two major lessons. The first lesson is, that during the modelling process, particular attention must be paid to ensure that the various cost parameters are accurate. The sec-

ond is, that implementing the optimal manufacturing-distribution configuration may not always be practical, because fast changes in market conditions may require a different configuration«, recalls Tibor Kovács, Regional Technical Director at Dreher Breweries. During the optimization process, the product manufacturing and packaging costs were modelled for both fixed and variable costs. It was defined what products the different factories and their packaging lines could produce. The model was run with these parameters, as well as with parameters containing assumed developments in terms of capability and capacity, involving new manufacturing and packaging lines.

»The optimization provided tangible information on which factories were to be developed, and what capabilities the individual factories should focus on. It became clear to the management of these plants where their competitive disadvantage lay compared to other factories and which areas they had to improve in order to receive further production volumes«, said the director when describing the results.

Redefining competition

In the future, the companies wanting to succeed will have to prepare thoroughly for time-based competition. They need to be aware that it is no longer companies that they compete against, but it is the company chains built on vertical supply. »The aim is to optimize as large a segment as possible of the whole product value chain. It is no longer sufficient to optimize the stocks of my own company; I also need to see the stocks of my key suppliers and customers, and then we have to optimize stocks in all three«, explains university professor and supply chain management specialist Dr. Zoltán Szegedi. We need to be aligned with major customers and suppliers, and carve out as large a segment as possible from the value chain. The task of future optimization initiatives is to assist the players in the supply chain to achieve the best results possible. ●

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