

The thesis deals with the interrelations of production and transportation in supply chains for the delivery of parts from several suppliers to a single customer by consolidated tours and vendor managed inventories. Today, transport is often suboptimally organized as it is based on production planning which does not take into account any requirements of transportation. Thus, the dependencies of the assignment are explained within different time horizons. A mathematical model was devised to exemplify these issues. In particular, it includes a lot sizing model with sequence dependent setup costs and period spanning setup times. Linking of the two partial models with accuracy to the minute was also necessary. The complexity of this mixed integer linear program imposed the development of a heuristic solving procedure. This procedure makes use of the identified dependencies within time horizons. It successively determines first lot sizes and tours simultaneously and second production sequences and routes. Additionally, an information technology framework was developed that helps set up decentralized organization for such planning methods. It was demonstrated that including transport leads to better overall results.