Operations and Information Management

Course Description

Operations management comprises the planning, control, execution, and monitoring of all internal company resources and capacities for the manufacture of products and services. This course provides students with the knowledge and skills to apply the theoretically sound and practice-relevant concepts of operations management to different problems and tasks (considering central megatrends) and draws process-relevant conclusions for verifiable performance improvements. The consideration of robust software solutions plays an important role here. Starting from reliable demand forecasts, students will consider different scenarios for the optimal location of companies. The process design defines the basic framework for processes, decision rules, and process performance analyses. This shows in the subsequent process planning how optimal order sequences are derived under certain priority rules. In inventory management, various models for optimizing inventory are considered in order to apply practice-relevant methods for calculating capacities and production plans, taking into account various restrictions. Supply chain management investigates how independent companies can optimally coordinate their activities and promote cross-company communication through sustainable information systems. The course concludes with an examination of human decision heuristics and preferences and their anticipation to decision behavior within the framework of behavioral operations management.

Contents

1. Introduction to Operations Management
   1. Definition, Subjects, and Tools of Operations Management
   2. Operations Management under Circumstances of Conflicting Demands
2. Preparation of Reliable Demand Forecasts
   1. The Forecast Problem
   2. Qualitative Forecasting Methods
   3. Causal and Time Series Forecasts
   4. Assessment of Forecast Quality
3. Site planning
   1. Central Problem Aspects
   2. Arbitrary Locations and Transport Costs
   3. Optimization with Pre-Determined Locations
   4. Site Selection and Response Times
4. Process Design and Process Planning
   1. Process Types
   2. Process Structure
   3. Process Performance
   4. Priority Rules for Planning and Controlling Processes
5. Inventory Management and Production Control
   1. Models for Optimizing Stocks
   2. Continuous Inventory Management
   3. Function and Application Areas of MRP II and Just in Time
   4. Methods for Optimal Planning of Capacities and Production Plans
6. Information Systems in the Supply Chain
   1. Increased Performance through Product and Process Design
   2. Order Policy, Demand Forecasts, and Demand Planning
   3. Hellingrath and Kuhn's Three-Pillar Approach
   4. Requirements for Supply Chain Information Systems
   5. Market Analysis of Selected IT Systems
7. Behavioral Operations Management
   1. Decision Heuristics for Solving Complex Problems
   2. Decision Behavior and Decision Prognosis
   3. Decision Influencing