FAKULTÄT FÜR BETRIEBSWIRTSCHAFTSLEHRE
Lehrstuhl für Allgemeine BWL und Logistik
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UNIVERSITY
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Themen der BWL Bachelorarbeiten FSS 2022

Literaturrecherche

1. Challenges of Free-Floating Carsharing Services (English, German)

Cars from the carsharing service stadtmobil can be found in many streets in Mannheim. Especially in recent years, the number of free-floating carsharing services has grown massively. Since the cars in such services are not rented at fixed locations, but can be picked up and parked anywhere, the provider must ensure a sophisticated distribution of the cars over the urban area.

The goal of this thesis is to provide a literature review on these free-floating carsharing services. Besides the problem of redistributing the cars, it should be investigated which other decisions play a significant role in free-floating carsharing services. After the relevant planning tasks have been characterized and investigated, the different studies and models should be compared.

2. Route Planning for Ride-Sharing Services (English, German)

In recent years, ride-sharing services have gained massively in importance. Providers such as CleverShuttle, Uber or Lyft have become an indispensable part of everyday life for many. Whether a ride-sharing service is successful depends to a large extent on the underlying route planning and the consolidation of the individual routes. The algorithms and models behind such a service should be investigated in more detail in this thesis.

The goal of this bachelor thesis is to investigate different route planning models and algorithms for ride-sharing services. A detailed literature review should be conducted to provide an overview of the trade-offs that are captured in these models. Furthermore, the main differences and similarities of the approaches should be presented.

3. External New Product Development (English)

In business and engineering, new product development (NPD) covers the complete process of bringing a new product to market, renewing an existing product or introducing a product in a new market. This process is usually carried out in three distinct stages of ideation, selection, and development. In any of these stages, firms can rely on their internal research and development (R&D) units, or collaborate with external innovators and outsource part of the work to them.

The thesis should give an extensive review of the most recent trends in external new product development across all the three aforementioned stages. The goal of the thesis is to first identify the main issues in such collaborations and then to find out the main areas of interest for the academic literature.

4. Emission Responsibility Allocation (English)

The Greenhouse-Gas (GHG) emissions associated with the direct operations of a company are far exceeded by the indirect emissions associated with its supply chain. Therefore, accounting and rationalizing emission responsibility in supply chains could make an important contribution to achieving the desired global CO_2 emission reduction targets.

The thesis should give an extensive literature review on emission responsibility allocation within supply chains. The main goal is to identify the most prominent mechanisms advocated by the academic literature and the ones commonly used in practice.

5. Optimization models for production planning under uncertainties (English)

Production planning problems are among the most widespread applications of optimization models using mathematical programming. However, in practice, results from purely deterministic production planning models which only use expected values as an estimation of uncertain parameters, may not be satisfactory. Practical planning problems often include various types of uncertainty which should be identified and incorporated into the optimization model to derive the right decisions. The goal of this thesis is to provide a structured overview of the literature dealing with production planning models under different forms of uncertainty.

The thesis should include a discussion on relevant types of uncertainty in production planning, the necessity of considering them, and different applicable methods for developing an optimization model considering uncertain parameters. Finally, the thesis should identify research gaps in this field and propose future research directions.

6. Game theory-based models in green supply chain management (English)

Game Theory (GT) has been widely used for studying the interaction between different players in the supply chain (SC). As environmental challenges are proliferating, supply chains have gained a new dimension, the green operations. As with any change, this yields new planning problems and hence new interactions between companies, which can be well examined via game theoretical methods. However, comprehensive literature reviews for this research stream are scarce.

The goal of this thesis is to identify and classify papers that use GT models to study Green Supply Chain Management (GSCM). This includes GT models that take government interventions into consideration. This intersection is important because government intervention is often the catalyst for players in SC to adopt green behavior.

7. Supply chain planning problems in plastics recycling (English)

The environmental consequences of plastic solid waste are visible in the ever-increasing levels of global plastic pollution both on land and in the oceans. Although there are important economic and environmental incentives for plastics recycling, end-of-life treatment options for plastic solid waste are in practice quite limited. To mitigate the plastic waste (PW) problem, scholars have examined the reverse logistics of PW and have proposed approaches to optimize different stages of the treatment of PW from its end-of-use to end-of-life.

The goal of this thesis is to provide an extensive literature review on papers that examine SC/RL planning problems in plastics recycling. In addition, the thesis should examine the non-academical literature to assess the gap between the recent technological developments, enabling better treatment of PW, and their coverage in the academic literature.

8. Customer preferences for home delivery options (English, German)

Online shopping and home delivery continue to gain in popularity, and new business models and service options are emerging. For example, on-demand e-grocery startups like Gorillas and Flink promise 'instant' grocery delivery within a few minutes. To optimally plan associated fulfillment operations, service providers benefit from information on customer preferences for different delivery options.

The aim of this thesis is to summarize existing empirical findings on customer preferences for (attended) home delivery options. The student should identify the relevant literature and give a structured overview of the conducted empirical studies and obtained results.

9. Machine Learning for Supply Chain Planning (English, German)

Availability of ever richer data as well as methodological advances have triggered a recent strong interest in machine learning approaches to supply chain planning. These approaches deviate quite fundamentally from traditional paradigms, e.g. by integrating forecasting and planning.

This thesis should review the academic literature on machine-learning approaches to supply chain planning. In particular, it should identify different arguments for the potential superiority of machine-learning based approaches over traditional ones and report corresponding results from the literature. The thesis should synthesize its findings in a framework.

Explorative Studie

10. Success Factors of Same Day Deliveries (English, German)

Due to the Corona pandemic, e-commerce has experienced a strong increase in demand. In response, the number of companies selling their products through the online channel has also risen dramatically. The speed of order delivery has become an important factor that differentiated different retailers. As a result, a segment of retailers promises same day deliveries to customers.

The goal of this bachelor thesis is to investigate the challenges of same day deliveries in an exploratory study. In particular, success factors that companies have identified for a successful implementation of same day deliveries should be characterized.

11. External R&D in Pharmaceutical Industry (English)

Due to skyrocketing costs, large pharmaceutical companies more and more procure their future candidates for drugs from small biotech companies, e.g. the Comirnaty vaccine which was developed by Biontech and acquired by Pfizer. This shift in big pharma's R&D process has given rise to a huge ecosystem of small and medium-sized biotech companies whose sole ambition is to sell their innovation to larger companies.

This thesis should give an overview of the most recent trends in the pharmaceutical R&D process, and present data on current and future (supply) market structures. The goal is to understand for which types of innovation big pharma companies are willing to interact with small biotech companies, and for which other types traditional in-house drug development remains the preferred option.

12. The role of SC digitalization in managing SC disruption risks (English)

The quality of decision-making models, specifically for managing disruption risks in a supply chain, strongly depends on the availability, completeness, and validity of data. Blockchain and digital technologies, advanced track and trace systems, big data analytics, and smart operating systems have the potential to improve SC risk management by providing accurate real-time data and predicting disruptions.

This thesis aims to review the literature on SC disruption risk management and to study recent developments in SC digitalization to find a bridge between managing SC disruption risks and SC digitalization. Moreover, the thesis should investigate the developments of pioneer industries in implementing such technologies and analyze their achievements.

13. Sustainable SCM in global supply chains (English)

Global SCs are supply chains that extend beyond a single country by locating production plants abroad or configuring a supply network globally to take advantage of low-cost services and materials around the world. However, from the sustainability assessment perspective, the distance between buyers and suppliers is challenging for managers.

The goal of this thesis is to review the literature on sustainable SCM to find the key elements of sustainable global SCM and analyze the state of the research on these elements. Moreover, the thesis should provide a benchmark on well-known enterprises with global SCs from a sustainable point of view to analyze the key factors of sustainable management in such businesses. Finally, it should comment on research gaps and future research directions in this field.

14. Allocation of environmental credits (English)

The European Union is taking ambitious steps towards a sustainable future., The European Green Deal provides an action plan to boost the efficient and sustainable use of resources by moving to a carbon neutral circular economy. Affected by this legislation, companies have started to incorporate recycled/renewable feedstock into their production processes. Some recycled feedstocks cannot be tracked to final product which gave companies the ability to freely allocate environmental credits. A well-known example is green electricity. Electricity is produced in a grid with renewable and nonrenewable sources. Green electricity (environmental credits) is then sold to customers with higher willingness to pay, although there is no way of specifying that it comes from the renewable source.

The first aim of this thesis is to collect relevant information from academic and non-academic sources regarding credit allocation methods and chain of custody (CoC) methods which are designed to validate claims made about the product or the process which incorporates the recycled feedstock. The second aim is to make a comparative study between different methods and discuss the implications of each method to businesses and to their allocation planning.

15. On the long-term impact of the COVID pandemic on supply chain management (English, German)

The current COVID pandemic has confronted supply chains with enormous challenges due to e.g. supply disruptions and huge demand volatility. In the early days, the focus of the response was on fire-fighting to solve the most acute issues. Soon enough, however, a debate emerged concerning long-term implications for supply chain design. Some experts have been arguing that companies will have to redesign their supply chains with a focus on risk reduction. Others have been questioning whether the associated costs justify such a move.

This thesis should reflect the current state of the debate on the need for a systematic supply chain redesign, as a consequence of the COVID pandemic. To this end, it should review academic and non-academic literature and discuss actually observed supply chain design adjustments. The thesis should clearly identify the arguments brought forward to support the different views. It should conclude by synthesizing different perspective into its own position in the debate.

Quantitative Analyse

16. The Continuous Approximation approach to assessing transportation costs (English, German)

The academic literature includes a vast set of models for optimizing transportation operations. While these models are very powerful, their complexity may be prohibitive in certain settings, especially when the transportation part is only a subproblem of a larger problem. In this case, it is often not the actual transportation plan that matters so much but rather the resulting costs. The so-called continuous approximation method seeks to estimate these costs based on a few input parameters without solving a detailed transportation planning model.

The goal of this thesis is to assess the quality of the continuous approximation cost estimatation by means of a numerical study. To this end, the student should build a spreadsheet model that calculates the exact and the approximated costs for selected transportation planning instances. The thesis should then investigate the impact of parameter changes on the approximation quality.