Activity Report
2019/2020

Kühne Foundation Endowed Chair of Logistics Management
Kühne Institute of Logistics Management
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FOREWORD

This report covers the period from September 2019 to August 2020. In this period, the chair’s team continued to produce exciting research results that were published in a broad range of high-quality journals, to offer attractive lectures related to logistics and supply chain management and demonstrate impact in practice.

In early 2021, Wirtschaftswoche published again its ranking of more than 2300 business professors in German speaking countries in terms of research performance. It is a pleasure to note that I was part of the top 100 researchers, ranked 53rd. This ongoing success is a result of excellent work of doctoral students, dedication to research and the sustainable and the generous funding by the Kühne Foundation. An ongoing stream of publications in top-ranked journals is another indicator of research performance.

Starting in March 2020, the Covid pandemic entailed significant changes in terms of teaching, which was moved to an online format via zoom, interactions at the chair which mostly took place via zoom and academic conferences which were canceled or moved online. I am delighted to report that the chair’s team proved highly resilient and thus seamlessly adapted to those changes.

I would therefore like to thank the entire team at the chair for their dedication and energy they bring to their work and for the delightful atmosphere they help to create. This is the basis for the great work that is carried out here. Linda Stein does an outstanding job to assure smooth operations at the chair.

The range of internationally recognized research and teaching activities would not have been possible without the generous and sustainable support of the Kühne Foundation. I would like to thank Prof. Dr. h.c. Klaus-Michael Kühne as a truly outstanding donor who, since I have taken over the chair in 2009, has provided excellent opportunities. I furthermore appreciate the interactions with the managing director of the foundation, Dr. Christian Berthold. The Kühne Foundation’s goal to assure the practical relevance of logistics research has been a beacon for our work at the chair.

This report provides an overview of the chair’s activities. We all look forward to new exciting logistics research and teaching.

Prof. Dr. Stefan Spinler, Vallendar, April 2021
1 TEAM

Professor Dr. Stefan Spinler
Chairholder

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Professor Stefan Spinler holds the Kühne Foundation Endowed Chair of Logistics Management at WHU - Otto Beisheim School of Management. He received a master's degree in electrical engineering from Friedrich-Alexander University in Erlangen, with research stays at University College London and Bell Labs (USA). In 1997, he was awarded the diploma in electrical engineering. Subsequently, he joined Infineon Technologies with responsibilities in process integration, quality, and supply chain management. From October 1999 to August 2002, Prof. Spinler was a doctoral student in the department of Production Management and taught at WHU and Leipzig Graduate School of Management (HHL).

His research on options on capacity has been presented at international conferences and leading US business schools. Moreover, his research was awarded a number of prizes, most notably the Management Science Strategic Innovation Award (from EURO) as well as the GOR dissertation award. Upon the completion of his doctoral studies, Prof. Spinler spent a year as a lecturer at the Wharton School, where he taught classes in the MBA and PhD programs and developed a real options class for executives. He has been invited to teach the real options class at MIT as a guest professor in their Leaders for Manufacturing Program. He was awarded the best guest lecturer award twice at HHL. His postdoctoral degree (Habilitation) covered aspects of market-based supply chain coordination and was completed in September 2008. In January 2009, Prof. Spinler was appointed to the Chair of Logistics Management at WHU, which until 2021 was sponsored by the Kühne Foundation.

Linda Stein
Personal Assistant

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Since the appointment of the Chair of Logistics Management by Professor Spinler in 2009, Linda Stein has been the chair's secretary.
Lena Bell, M.Sc.
Research Assistant
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Lena Bell (born 1991) joined the chair of Logistics Management at WHU as an doctoral student and research assistant in September 2019.

She holds a B.Sc. in Business Administration from the University of Trier, an M.Sc. in Business Administration: Marketing as well as an Master's in International Management from the University of Cologne.

After graduation, Lena Bell worked as a consultant with McKinsey & Company for two years, she mainly focused on future topics such as “future mobility with alternative powertrains”, “decarbonization efforts of the European Union”, “systematic shift towards green energy” and “machine learning to forecast future demand”. Additionally, she supported McKinsey driven World Economic Forum Initiative “The Future of Last Mile”, which marks also the base for her PhD research.

Research interests: Future of last mile logistics, urban decarbonization, machine learning, simulation

Sven Falkenberg, M.Sc.
Research Assistant
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Sven Falkenberg (born in 1989) joined the chair of Logistics Management at WHU as an doctoral student and research assistant in January 2019.

He holds a B.Sc. and M.Sc. in Supply Chain Management from the University of Cologne. His studies focused on supply chain strategies, location planning, logistics and inventory management. The focus of his thesis was on safety stock considerations in cyclic production environments.

After graduation, Sven Falkenberg worked as a consultant with McKinsey & Company, specializing in operations with focus on supply chain management serving pharma clients and various other industries on topics such as supply chain strategies, S&OP transformations and transport optimizations.

Research interests: Supply chain disruptions, Machine learning, Predictive maintenance, Digitization of supply chain management
Martin Schlappa, M.Sc.
Research Assistant
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Martin Schlappa (born 1993) joined the Chair of Logistics Management at WHU - Otto Beisheim School of Management as an external doctoral student in January 2020 and then switched to a role as internal doctoral student and research assistant as of June 2020.

He holds a B.Sc. in Business Administration from WHU - Otto Beisheim School of Management and a M.Sc. in International Management from the London School of Economics and Political Science. His studies focused on management, finance and supply chain management. After graduation, Martin worked as a consultant with McKinsey & Company, specializing in finance and operations and serving mainly clients in the realm of the energy industry.

Research interests: renewable energy, machine learning, reinforcement learning, scaling of AI pilots, automation of machinery

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Simone Vogel, M.Sc.
Research Assistant
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Simone Vogel (born 1992) started her PhD in June 2018, first as an external doctoral student and since October as a research assistant at the Chair of Logistics Management at WHU - Otto Beisheim School of Management. Her research interests include the challenges of urban freight transport, mass customization and modular vehicle construction systems.

Ms. Vogel obtained a Bachelor's degree (B.Sc.) in Business Administration at WHU - Otto Beisheim School of Management in 2015. She then completed her Master of Science (M.Sc.) in Management & Technology at the Technical University of Munich with a major in Operations & Supply Chain Management and a minor in Mechanical Engineering.

During her studies Simone Vogel gained first work experience in Germany and abroad, among others at Daimler AG in Stuttgart, KPMG AG in Munich or Benteler International AG in Auburn Hills, MI, USA.
Professor Dr. Jürgen Ringbeck
Honorary Professor

Professor Jürgen Ringbeck, former Senior Partner with Booz Allen Hamilton / Booz&Company, is working as an independent strategic investor and consultant since spring 2014. After lecturing at WHU since 2012, he was appointed honorary professor by WHU - Otto-Beisheim-School of Management in 2014. Professor Ringbeck held lectures on various topics of corporate management and currently holds a lecture on Transportation Management in the Master of Science Program.

Gianfranco Aguirre, MBA
Doctoral Student
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Gianfranco Aguirre (born 1987) has been a Ph.D. student at the WHU – Otto Beisheim School of Management (Chair of Logistics Management) since February 2019. His research focuses on Data Analytics applied to Investments: "Applications of machine learning in algorithmic trading strategies". Gianfranco holds an MBA from WHU – Otto Beisheim School of Management with a Master Thesis on: "Digitalization of Asset Management - A Robo-advisor case", and a bachelor's in engineering from the Universidad Catolica Santa Maria (Peru).

Gianfranco has been working at Deloitte Consulting since 2018 as Manager in the Strategy department. He oversees projects for the Top Management within the Investment Management and Private Equity industry. He supports Investment Management and Private Equity firms to overcome strategic challenges along the value chain with strong focus on Data Analytics and Machine Learning topics. Before Deloitte, he worked for more than nine years in a Hedge Fund in Lima, Peru. He was engaged in several startup activities in the field of Robo-advice and Algorithmic Trading. He was also a member of the Investment Committee and specialized in Volatility and Automated Strategies, including ETFs, Equities, Futures, and Options.

Research interests: Data Analytics, Machine Learning, Investments strategies
Niklas Berger, M.Sc.
Doctoral Student

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Niklas Berger (born 1993) started his PhD in September 2019 as an external doctoral student at the Chair of Logistics Management at WHU – Otto Beisheim School of Management. His research focuses on supply chain performance and its optimization, e.g. through dynamic pricing and targeted revenue management.

Niklas completed his Bachelor and Master of Science degrees at WHU as well. During his studies, he focused on operations and finance and wrote his master thesis in cooperation with Infineon on profit optimization through lead-time based pricing. Furthermore, he gained practical experiences in Investment Banking, Private Equity and Management Consulting.

After completing his studies, Niklas started as a management consultant at McKinsey & Company with focus on merger management and operations optimization, in particular for fund-led companies.

Research interests: Supply chain optimization, dynamic pricing, revenue management

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Jasmin Bigdon, MBA
Doctoral Student

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Since 2015 Jasmin Bigdon (born 1983) is member of the board at the leading Swiss freight railway SBB Cargo AG. Since March 2018 she is CTO and responsible for the business area Rolling Stock (locomotives and freight wagons technology, service and maintenance). From 2012 to Feb 2018 Jasmin Bigdon was responsible for the business development at SBB Cargo AG.

Before joining SBB Cargo she worked several years as strategy consultant and manager for the top management consultancy Arthur D. Little with focus on product strategy, M&A and future mobility and logistics concepts in the automotive and logistics industries.

In September 2017, Jasmin Bigdon joined the chair of Logistics Management at the WHU in Vallendar as external doctoral student. Her research area is urban logistics.
Novi Dewan, MBA  
Doctoral Student  
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Novi Dewan (born 1982) has been a PhD Student at Prof. Stefan Spinler’s Chair of Logistics Management at WHU - Otto Beisheim School of Management since February 2017. She has been a Visiting Researcher and Doctoral Fellow at INSEAD’s Humanitarian Research Group under the guidance of Prof. Luk Van Wassenhove since October 2018.

Novi did her Bachelor’s of Engineering (IT) at the University of Pune, India. Her final year Engineering project, Training Automation System, automated the training needs of thousands of employees of Tata Consultancy Services (TCS), getting her the Best Engineering Project Award at the InterUniversity level. After graduating in 2004, Novi worked with Kanbay (now Capgemini) performing Business Intelligence and Data Mining for the Prime Brokerage practice of Morgan Stanley.

In 2006, Novi received a partial merit-based scholarship from British Petroleum to pursue her MBA at WHU - Otto Beisheim School of Management in Germany. During the MBA, she participated in International Modules at Kellogg (US), CEIBS (China) and IIM-Bangalore (India). Her MBA thesis, about the Indian Life and Health Insurance at Simon-Kucher and Partners (SKP), was published into a book by SKP.

After graduating in 2007, Novi has worked primarily in Supply Chain, Strategic Logistics and Transportation and Change Management primarily at Inhouse consulting and/or program management roles for LSG Sky Chefs, DHL Inhouse Consulting, Amazon, Arcelor Mittal, Adidas and most recently at Salesforce in Germany and Luxembourg.

Novi hopes that the valuable guidance from Prof. Spinler, Prof. Van Wassenhove, the fellow Research Assistants and her background in Engineering and Supply Chain will help her advance her Thesis Topics.

Andreas Faber, M.A.  
Doctoral Student  
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Andreas Faber (born 1988) joined the chair of Logistics Management at WHU as an external doctoral student in August 2016. His research focuses on data-driven supply chain planning. Specifically, he is working on intermittent demand forecasting, churn prediction and price discrimination.

Andreas Faber obtained a master's degree in Industrial Engineering from Karlsruhe Institute of Technology (KIT) in 2013. In his master thesis, he analyzed the product life cycle identification and demand forecasts of spare parts in the automotive aftermarket in cooperation with the Robert Bosch GmbH. During his studies, Andreas Faber spent two semesters abroad at Marmara University in Istanbul (Turkey).

After his graduation, Andreas Faber joined McKinsey & Company as a management consultant. He is now a project manager working in McKinsey Digital, focusing on insurance, healthcare and pharma, supporting in Digital business building and service operation optimization.
Mariam Alvin James Furrer, MBA
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Mariam Alvin James Furrer (born 1987) joined the chair of Logistics Management at WHU – Otto Beisheim School of Management as an external Ph.D. student in July 2017. Her research focuses on Supply Chain Risk Management and Climate Change: “The Impact of Climate Change Related Events on Supply Chain Management: Assessing the Vulnerability of Supply Chains and Developing Mitigation & Adaptation Strategies for Firms”

Mariam graduated with a Master of Business Administration (Academic MBA) degree from the Arab Academy for Science and Technology and Maritime Transport in 2013 as the best student of the year with outstanding GPA of 3.98. In her thesis, she was measuring Supply Chain Management Performance in Service Industry by using Global Supply Chain Forum (GSCF) Framework and the Services Supply Chain Model. In 2009, she earned her Bachelor Degree in Trade Logistics and International Transport Management from the Arab Academy for Science and Technology and Maritime Transport. Her studies entailed the analysis of Liner Shipping, Container Shipping, Ocean Freight Markets, Logistics and Supply Chain Management. Furthermore, she interned from 09.2008 to 09.2009 in G.A. Paper International, where she was able to channel her academic studies into practical skills. Mariam Furrer is currently holding a position as an Assistant Lecturer in the Transport Operations Management Department at the Arab Academy for Science and Technology and Maritime Transport in Cairo, Egypt. Next to her doctoral studies, Mariam is currently working as part-time in the Dean’s Office at the WHU – Otto Beisheim School of Management.

Research interests: Supply Chain Management, Risk Management, Risks Induced by Climate Change, Developing Countries, Supply Chain Vulnerability and Resilience.

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Alexander Hess, M.Sc.
Doctoral Student
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Alexander Hess (born 1987) has been a Ph.D. student at the Chair of Logistics Management since July 2016.

His research is focused on applications of machine learning, demand forecasting, vehicle routing, and capacity planning in the field of last-mile urban delivery platforms.

Alexander studied Management at the WHU – Otto Beisheim School of Management (Vallendar, Germany), in the MBA program at the New York University – Leonard N. Stern School of Business (United States), at the EBS Universität für Wirtschaft und Recht (Oestrich-Winkel, Germany), and the Copenhagen Business School (Denmark). During his studies, he focused on Finance, Supply Chain Management, and Business Intelligence. In his Master's and Bachelor's theses he built optimization models for the German timber logistics market that were adopted in the industry. Furthermore, he spent a research semester in the PhD program at the Center for Transportation & Logistics (CTL) at the Massachusetts Institute of Technology with which he cooperates in his research on urban logistics.
Between 2014 and 2016, Alexander worked as co-founder and Chief Technology Officer (CTO) for a New York based and venture capital backed start-up company in the art industry where he was the first software engineer and lead backend developer and created an image recognition app for artworks that received a lot of attention in the industry (investment from Leonardo DiCaprio, articles in Financial Times, New York Times, Bloomberg, and others).

Julian Höhler, M.Sc.
Doctoral Student

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Julian Höhler (born 1990) joined the chair of Logistics Management at WHU as an external doctoral student in May 2020. His research is focused on applications of machine learning in the energy industry.

Julian holds a B.Sc. in Business Engineering from KIT - Karlsruhe Institute of Technology and a M.Sc. in Management from WHU - Otto Beisheim School of Management. He spent semesters abroad at Tongji-University, Shanghai and University of Maryland. His studies focused on operations management and IT systems. The focus of his thesis was on the application of lean principles at hardware start-ups based on an example from the 3D printing industry.

After graduation, Julian worked as a strategy consultant with Strategy&, specializing in Technology Strategy with focus on large IT transformations.

Research interests: Prediction of congestion in electronic transmission lines, digitalization in the energy industry, machine learning

Ulrike Kluge, M.Sc.
Doctoral Student

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Ulrike Kluge (born 1989) is a doctoral student at the WHU – Otto Beisheim School of Management (Chair of Logistics Management) since July 2018.

Her research is focused on future trends of mobility along the travel chain, travel behavior, new travel patterns, and novel mobility concepts for urban and long-distance mobility. She holds a Bachelor of Arts degree in Corporate Management and Economics from the Zeppelin University and a Master of Science in Organizational and Social Psychology from the London School of Economics and Political Science. During her studies, she focused on Economic and Social Sciences as well as Business Psychology. In parallel to her PhD, Ulrike works as a research associate at Bauhaus Luftfahrt, an interdisciplinary aviation and mobility research institute in Taufkirchen (near Munich). Here, she conducts EU- and industry projects focusing on future trends within the overall mobility sector and current and future passenger requirements towards the transport system. Prior to her engagement at Bauhaus Luftfahrt, she gained experience working as a consultant for several years.
**Lisa Knörrer, M.Sc.**
Doctoral Student

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Lisa Knoerrer (born 1992) started her PhD in October 2019 as an external doctoral student at the Chair of Logistics Management at WHU - Otto Beisheim School of Management.

Her research interests include data-driven-changes in companies and the evolution of data strategies.

Ms Knoerrer obtained a Bachelor's degree (B.Sc.) in 2015 and finished her Master of Science (M.Sc.) in 2017 in Business Administration at WHU - Otto Beisheim School of Management with a major in Supply Chain Management. During her studies, Lisa Knoerrer gained first work experience among others at HDI Seguros in Buenos Aires, Argentina, Kuehne + Nagel Ltd. In Toronto, Canada, KPMG AG in Munich, Germany. After her graduation, Ms Knoerrer worked as a project manager for Kuehne + Nagel AG in Schinellelegi, Switzerland. Currently she holds the position as Change Manager and Global Process Owner in the Product Development Department. She is based in Kuehne + Nagel Contern, Luxembourg.

Research interests: Digitization of supply chain management, data strategy, data-driven changes in companies

**Daniel Makowski, Dipl.-Ing. oec.**
Doctoral Student
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Daniel Makowski (born 1985) joined the chair of Logistics Management at WHU as an external doctoral student in July 2015. His research is on the logistics of fast moving consumer goods in the B2C area. In particular, he examines ways in which e-grocers can bridge the last mile. Daniel graduated with a degree in industrial engineering (Dipl.-Ing. oec.) from University Hamburg and TU Hamburg- Harburg in 2012, majoring in logistics, production management, statistics and marketing. His student research project – written in cooperation with BUSS Logistics GmbH (Hamburg) – dealt with work place health management and his thesis – written in collaboration with Leeb GmbH (Memmingen) -- dealt with optimization and adjustment of internal logistics processes.

During his studies, Daniel was a member of the German rowing national team and won several medals at World and European Championships. In April of 2013, after 3- month stay in the US, he joined at Mars GmbH for a management development program working as a production team leader and project manager. Since January 2016 Daniel is working for Porsche Consulting as management consultant.
Marcel Peppel, M.Sc.
Doctoral Student
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Marcel Peppel (born 1994) joined the chair of Logistics Management at WHU – Otto Beisheim School of Management as an external doctoral student in July 2020.

He holds a B.Sc. and M.Sc. in International Management from WHU – Otto Beisheim School of Management. His studies focused on global supply chain and operations strategies, industrial excellence as well as sustainability. During his studies, Marcel Peppel spent two semesters abroad at Kelley School of Business, USA, and at NOVA School of Business and Economics, Portugal. His thesis focused on the acceleration of the development and adoption of sustainable vehicle technologies.

After graduation, Marcel Peppel worked as a management consultant with Porsche Consulting. He supported strategy and transformation projects in the automotive and industrial goods sector. Research interests: Last mile delivery, sustainable vehicle technologies, machine learning, network optimization

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Nicolaus Preuss-Neudorf, M.Sc.
Doctoral Student
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Nicolaus Preuss-Neudorf (born 1992) is an external doctoral student at the WHU – Otto Beisheim School of Management (Chair of Logistics Management) since 2019. His research focuses on advanced analytics approaches and the application of machine learning methods in data driven operations.

Nicolaus studied Physics at the University of Cologne (BSc) and obtained a Master of Science in Astrophysics, Particle Physics and Cosmology at the University of Barcelona with a focus on Extragalactic Astronomy and Supermassive Black Holes.

He has gained professional experience in the consulting industry with projects in the private equity and automotive sectors as well as academic experience at scientific institutes in Germany (University of Cologne) and Spain (Instituto de Astrofisca de Canarias). Since 2018, he has been working as a Data Scientist for the Deloitte Analytics Institute and gained experience in the development of Proof of Concepts and Minimum Viable Products using machine learning for a variety of applications. Currently, he is working as a member of the Deloitte AI Institute within the innovation hub Garage.
Adrian Viellechner, M.Sc.
Doctoral Student
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Adrian Viellechner (born in 1989) joined the chair of Logistics Management at WHU as an external doctoral student in August 2018.

He holds a B.Sc. and M.Sc. in Management & Technology from the Technische Universität München (TUM). His studies focused on operations, supply chain management, and logistics. He concluded his M.Sc. with a thesis on modeling intermodal freight transportation between Europe and Asia.

After graduation, Adrian Viellechner worked as an operations management consultant in the supply chain management service line at McKinsey & Company where he mainly supported transportation, distribution, and warehousing projects in the retail and transportation industry.

Research interests: Predictive analytics, machine learning, cargo operations, maritime transportation, air freight

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Lothar Weichert, M.Sc.
Doctoral Student
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Lothar Weichert (born 1989) has been a doctoral student in humanitarian logistics at the WHU – Otto Beisheim School of Management (Chair of Logistics Management) since October 2018. His priority is to extend the academic understanding of humanitarian logistics with research that is also relevant for the humanitarian community.

Lothar’s research interests are humanitarian logistics and supply chain management, robust optimization, and aviation. His doctoral project is being done in close cooperation with two humanitarian organizations and is investigating innovations for humanitarian logistics. The focus lies on objective, quantitative assessments of such innovations while deriving concrete insights for practitioners.

Lothar holds a Master of Science in Information Engineering and Management from the Karlsruhe Institute of Technology (KIT), Germany, and a Master of Science in Supply Chain Engineering from the Georgia Institute of Technology (Georgia Tech), USA. Before his academic leave of absence, Lothar worked as a strategy consultant at Strategy& for three years. He supported a wide range of assignments, with a focus on supply chains and operations strategy.
Philipp Nicolas Weil, M.Sc.
Doctoral Student
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Philipp Weil (born 1991) joined the Chair of Logistics Management of WHU as an external doctoral student in 2018. Since then, he focuses on the topic of seasonal slot scheduling at airports. Slot scheduling is an important field of air traffic management, determining the sequence of take-off and landing rights at coordinated airports. The purpose of his research is to achieve an efficient allocation of slots that enables a smoother and more sustainable air traffic in future.

Philipp holds a Masters degree in Global Logistics and Supply Chain Management from Kuehne Logistics University (KLU), Hamburg, and a Bachelor degree in Economics and Management from Johannes Gutenberg University, Mainz. During his academic career, Philipp spent a semester abroad at Chalmers University of Technology in Gothenburg, Sweden, and at Libera Università di Bolzano, Italy.

Parallel to academics, Philipp works as Senior Management Consultant in the area of logistics and operations at PricewaterhouseCoopers GmbH WPG, Frankfurt am Main.

Jennifer Weingarten, M.Sc.
Doctoral Student
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Jennifer Weingarten (born in 1990) joined the chair of Logistics Management at WHU as an external doctoral student in June 2018.

She holds a BSc in International Business Administration from the University of Twente (Netherlands) and an MSc in Operations Management & Logistics from the Eindhoven University of Technology (Netherlands). Her master studies focused on supply chain management and transportation. She concluded her MSc with a thesis on developing a same-day delivery concept for an international B2B player in the construction industry.

After graduation, Jennifer Weingarten worked as management consultant in the operations practice at McKinsey & Company where she mainly supported supply chain management projects in the telecommunications and consumer goods industry.

Research interests: Predictive analytics in supply chain management, omni-channel supply chain, same-day delivery, last mile
Jan Philipp Werning, M.Litt.
Doctoral Student
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Jan Philipp (born 1990) joined the chair of Logistics management at WHU as an external PhD candidate in April 2017. In his research he analyses the implementation of Circular Economy and the resulting impacts onto the whole value-chain.

Jan Philipp has been awarded a Master of Letters (MLitt) at the end of his studies of International Management at the University of St Andrews (Scotland) from 2013 to 2014. In his master thesis he studied the potential of Bitcoin to be a disruptive innovation. Prior to this, Jan Philipp has graduated as a Bachelor of Arts (BA) in International Management from the International School of Management (ISM) in Frankfurt (Germany). In his bachelor thesis he developed a KPI framework to minimize systematic delays at IATA Level 3 airports. The KPI framework was validated with movement data from one of the biggest airports in the world. During his undergrad Jan Philipp has studied one semester abroad at the Universitat Ramon Llull in Barcelona (Spain).

In 2019 Jan Philipp joined Bain & Company where he is working as a Consultant on various strategic projects for clients from different industries. Before he worked for OakTree Partners as a Senior Associate. During his time at the consultancy Jan Philipp specialised towards the Travel, Transport and Logistics industry. He was able to work closely with clients from the Rail and Parcel industry on strategic and implementation-oriented projects.

Research interests: Circular Economy, Value Chain-Management, Business Model-Design
Dr. Anna Achenbach
Alumna
Data Scientist
Deutsche Post DHL
Germany, Bonn

Dr. Vefa Alparslan
Alumnus
Expert Strategy
Eurowings (Lufthansa Group)
Germany, Cologne

Dr. Benedikt Anderhofstadt
Alumnus
Project Manager Research Funding and Green Logistics
BMW Group
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Dr. Reinhard Baller
Alumnus
Head of transport purchasing, freight invoicing and -analysis of brand
Audi
Audi AG
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Dr. Judith Berndroth
Alumna
Amazon Transportation Services, Sort Centers
Head of EU LIT - Launches, Innovation & Tech Integration
LU, Luxembourg
Dr. Eike Bethmann (geb. Nohdurft)
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Dr. Daniel Hach
Alumnus
Chief Operating Officer
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Dr. Christian Rudolf
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HDI Systeme AG
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Dr. Max Schöne
Alumnus
Managing Director
heroal – Johann Henkenjohann GmbH & Co. KG
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Dr. Stefan Schulze-Schwering
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Director, MIT Megacity Logistics Lab
Director, MIT Computational and Visual Education (CAVE) Lab
Massachusetts Institute of Technology (MIT)
USA, MA, Cambridge
Logistics has become a key enabler in today’s global trade. And while today’s value creation networks exploit to the extent possible local business advantages, the challenges that come with these dispersed structures have grown substantially over the last ten years. Recognizing this trend, the WHU – Otto Beisheim School of Management founded the Kuehne Institute for Logistics Management, which comprises two endowed Chairs (Prof. Dr. Stefan Spinler and Prof. Dr. Carl Marcus Wallenburg) and currently about 20 PhD students. The institute was inaugurated in March 2012.

Our objectives are to generate new insights for the management of logistics and to disseminate this state-of-the-art knowledge into the research and business community.

To this end, we conduct high quality and internationally visible research, which is analytical, conceptual, or empirical in nature. Further, we provide specialized courses and lectures at various educational levels (BSc, MSc, MBA, Executive Education) and organize conferences for the business community and students in the area of logistics and supply chain management.

Current research projects are dedicated to the following areas:

- Management of logistics services
- Management of vertical and horizontal cooperation
- Logistics and supply chain controlling
- Sustainability in supply chains
- Risk management in supply chains
- Big data and machine learning in logistics and supply chain management
3 TEACHING

3.1 BACHELOR OF SCIENCE PROGRAM

Introduction to Python and Programming – held by Doctoral Student Alexander Hess

The main purpose of this course is to make the student familiar with basic concepts of programming in Python, one of the most important languages used at the moment.

This prepares the student for further courses, for example, in Data Science, Machine Learning, or Web Development.

Students taking this course in the past reported that they could use what they learned in summer internships as well, in particular when they worked in start-ups. Also, many students applied what they learned when writing their theses.

The topics introduced are:

- basic elements of a programming language
- modularization via functions
- boolean if-else logic
- flow control via for- and while-loops
- data types (e.g., lists, tuples, dictionaries, sets, arrays, data frames)
- object-orientation
- replacing Excel with Python
- obtaining data from APIs (e.g., Google Maps API)

Seminar Smart Cities

This seminar deals with various aspects of smart cities: deployment of sensor technology, policy design, city logistics concepts. Students analyze benchmark studies such as Singapore and examine to what extent the smart city concept can contribute to the benefits of the ongoing urbanization.

Sustainable Urban Transport

Course content Mobility is a fundamental human need, but at the same time transport is a major contributor to global CO2 and local particulate matter emissions. Thus, innovation in transportation and mobility will have to contribute to reducing and in the longer run eliminating these emissions to be able to achieve the 2015 Paris goals. For the first time in history of mankind, there are more people living in cities than in rural areas, by 2030 this share is expected to be about 70%. Thus, sustainable urban transport, which includes transporting people as well as goods, is a crucial area with exciting innovation taking place around the globe.
3.2 MASTER OF SCIENCE PROGRAM

Transportation Management – held by Honorary Professor Jürgen Ringbeck

Transportation is one of the fastest growing global industries. Travel and logistics are the major backbone of our global business and a core element of private life. The objective of this course is to give a comprehensive introduction into the challenges and best-practices of management and principles of global industry players like passenger airlines or logistics companies. Such management best-practice includes a deeper understanding of the underlying industry dynamics, and the outline of superior strategies as well as commercial and operational management methods of selected industry segments. The course will also highlight some specific management approaches which illustrate a way to a long-term sustainable industry.

Designing and managing the global supply chain

Logistics has grown from a purely functional orientation to become a key enabler of global supply chains. To achieve this, logistics needs to be integrated within the firm as well as across boundaries from suppliers to manufacturers to customers. As companies tend to focus on their core competencies, deverticalization of the value chain entails which necessitates coordination of logistics activities. Logistics is not only concerned with flows of goods and cash, but also – to an ever increasing degree – with the flow of information. Hence it is natural that IT systems play a crucial role to achieve what has been called the 4Rs – that is, the right product at the right place and the right time at the right price.

Sustainable Operations Management

Sustainability is emerging as a key concern for businesses, not least because of the agreement which was reached in the COP21 meeting in Paris in 2015. Thus, it is imperative that students are familiar with sustainability assessment tools. Case studies on successful sustainable companies highlight key challenges and solution concepts.

3.3 FULL-TIME MBA PROGRAM

Operations Management

Operations management is about designing, managing, and improving the activities involved in creating products and services and delivering them to customers. A great workshop offered by Porsche Consulting introduced the students to the importance of quality management in a very hands-on fashion: the process of assembling a pocket lamp was improved step-by-step along the lines of the Toyota Production System principles. Gregory Bryan, Director Operations at Amazon, illustrated why Amazon is so successful and how that relates to operations and supply chain management.

The Analytics Edge

Through analytics companies can improve their competitive positioning. With big data emerging in many areas, new tools based on statistics and machine learning become a necessity. In this course, we will use R to employ these tools and discuss the respective benefits.
3.4 PART-TIME MBA PROGRAM

Both The Analytics Edge and the Operations Management courses which are popular in the full-time MBA program are offered in the part-time MBA program, too.

3.5 DOCTORAL PROGRAM

Data Analytics

This course provides an overview of modern machine learning methods such as regression, tree-based methods, artificial neural networks and support vector machines. Unsupervised learning such as clustering and principal component analysis are also discussed. Lastly, visualization techniques are introduced as a useful means of communication.
4 THESES

4.1 BSC PROGRAM

- **Aßmuth, N.L.**
  Decarbonization of Road Freight: A sustainability analysis of technologies and practical procedures

- **Bürk, P.**
  Shipping then Shopping: How Amazon can Compete in the AI World by Revolutionizing its Last-Mile Logistics

- **Cramer, J.**
  Optimising replenishment decisions for DIY markets based on machine learning

- **Elling, T.**
  To what Extent does the Relationship Between an OEM and Carrier Matter, and how could Customer Integration lead to Higher Success?

- **Emken, K.**
  The Solar Energy Potential of the Sahara for Europe’s energy transition

- **Schaaf, J.**
  Future of Last Mile Delivery in Smart Cities – A Simulation of Mobile Cross-Docking

- **Wassenich, J.**
  Content Based Recommender Systems for Recipe Recommendation

- **Wurdack, M.M.M.**
  DigitalHealth in Germany as Opportunity for Network Operators
4.2 MSC PROGRAM

- **Christensen, N.S.**
  An Empirical Study on the Effect of Supply Chain Disruptions on Shareholder Wealth in Europe

- **Ivanova, G.**
  Scalability of Business Models - Evaluating the scalability of a power tool rental business at Bosch Power Tools Switzerland and developing of business model adaptations to accelerate business scaling

- **Jaiswal, S.**
  Last-Mile Delivery Ideas in Asian Countries and Their Application in Europe and the U.S.

- **Speis, J.L.J.**
  An analysis of how circular economy will improve the sustainability of the food sector

- **Vashisht, S.**
  Supply Chain Problems Faced by European Companies in Asia

4.3 DOCTORAL PROGRAM

- **Alparslan, V.**
  Acquisitions in the logistics sector: A sustainable value creation or aware value destruction? - A case study based analysis

- **Anderhofstadt, B.**
  The transition of road transport toward autonomous and alternative fuel-powered heavy-duty trucks in Germany

- **Baller, R.**
  Development and evaluation of a total landed costs Approach

- **Malina, S.**
  Supply Chain Complexity: A case study in the drive and control industry

- **Mönch, T. (2nd advisor)**
  Variable Takt Times in Mixed-Model Assembly Lines

- **Ringbeck, D.F. (2nd advisor)**
  Retail Data Analytics – Personalized Online Shopping, Chum Prevention, and Dynamic Pricing
4.4 FULL-TIME MBA PROGRAM

- **Ao, H.**  
  Business Model of nuclear technology Industry in China

- **Balioglu, Y. (2nd advisor)**  
  The rise of fintechs and their impact on global financial inclusion

- **Botha, C.**  
  Change Management for the Digital Transformation in German SMEs

- **Cacho Meza, S.d.P.**  
  Trade-off in Kraft Heinz’s distribution

- **Chen, J.**  
  Digitalization of operation in Manufacturing Industry – The transformation of the traditional manufacturing and industry 4.0 implementation in enterprises

- **Díaz Galué, M.C.**  
  Understanding inventory levels performance through customer demand prediction

- **Ekanem, I.M.**  
  Delphi and Dior - Big Data Ramifications in the Business of Sustainable Fashion

- **Hilgendorf, J.**  
  The value of cookie data in data driven online marketing Evaluating the impact of a 2020 BGH ruling and other present industry issues

- **Khan, Y.M.**  
  Business transformation in composites product industry

- **Pepic, S.**  
  Digital Strategy – an empirical investigation of the state and direction of the German/CE mid-sized enterprises

- **Solanki, A.S.**  
  Artificial Intelligence in Green Logistics: Exploration of a sustainable business aspect through proved solutions

- **Wu, Y.-J.**  
  How Supply Chain Resilience Works for the Olefin Sector in Asia to Respond to Disruptions of Covid-19 (Case Study: Formosa Plastics Group)
4.5 EXECUTIVE MBA PROGRAM

- **Kharchenko, A.**

- **Lemoine, F.**
  Optimization of a global platform design applied to material handling industry
5 TEACHING INNOVATION

5.1 GUEST LECTURES

- **Dr. Stefan Tabatabai**, Partner, Porsche Consulting
  Quality management and operational excellence
  September 08, 2019 as part of the FTMBA lecture “Operations Management”

- **Dr. Monika Hauck**, WHU
  Sustainable Fashion
  September 09, 2019 as part of the MSc lecture “Sustainable Operations Management”

- **Angela-Sophia Gebert**, Manager Academic Alliance, Celonis
  Introduction to process mining
  September 10, 2019 as part of the FTMBA lecture “Operations Management”

- **Baris Göncü**, Director, AlixPartners
  Making the automotive industry sustainable
  September 27, 2019 as part of the MSc lecture “Sustainable Operations Management”

- **Dr. Ani Melkonyan**, University Duisburg-Essen
  Sustainable Cities
  October 09, 2019 as part of the MSc lecture “Sustainable Operations Management”

- **Dr. Lisa Koep**, Head of Sustainability Management at Lidl
  How sustainable can a discounter be?
  October 16, 2019 as part of the MSc lecture “Sustainable Operations Management”

- **Dr. Judy Berndroth**, Amazon
  Amazon’s drive for sustainability
  October 18, 2019 as part of the MSc lecture “Sustainable Operations Management”

- **Wolfgang Pelousek**, PTV
  Data analytics opportunities
  November 09, 2019 as part of the PTMBA lecture “The Analytics Edge”

- **Philipp Schüh**, Daimler
  Data analytics in light truck configuration
  November 19, 2019 as part of the PTMBA lecture “The Analytics Edge”
• **Dr. Simon von Danwitz**, Business Development e.GO Digital  
The e.GO and its ecosystem  
February 18, 2020 as part of the BSc lecture “Urban Transport”

• **Gregory Bryan**, Director Operations, Amazon  
Operations Management  
April 25, 2020 as part of the PTMBA lecture “Operations Management”

• **Dr. Stefan Tabatabai and Florian Mock**, Porsche Consulting  
Quality and innovation management  
May 09, 2020 as part of the PTMBA lecture “Operations Management”

• **Julia von Massow**, Head of Global Inventory Management, thyssenkrupp Aerospace  
How Digital Tools Help To Enhance Inventory Management  
May 10, 2020 as part of the PTMBA lecture “Operations Management”

• **Hanna Richta**, DB Cargo  
How DB Cargo benefits from analytics insights  
June 22, 2020 as part of the FT MBA lecture “The Analytics Edge”

• **Wolfgang Pelousek**, PTV  
Data analytics opportunities  
June 23, 2020 as part of the FT MBA lecture “The Analytics Edge”

• **Dr. Imme Baumüller**, Director Data Analytics and Business Insights, Handelsblatt Media Group  
How to enable a data-driven organization  
June 29, 2020 as part of the FT MBA lecture “The Analytics Edge”

5.2 NETLOP-SEMINAR OF THE KÜHNE-FOUNDATION

For the NetloP-Seminar, which is now successfully run by Holly Hillen of the KLU who took over from Martin Willhaus, the former managing director of the Kühne Foundation, we provide content for one of the concentration seminars in Vallendar. This year, due to the Covid crisis, no seminar took place.
6 RESEARCH

6.1 DISSERTATION PROJECTS

Aguirre, Gianfranco (from 02-2019, ongoing)

“Data Analytics in investments - Applications of machine learning in algorithmic trading strategies”

Using data of the futures of the volatility index, we can predict bullish and bearish scenarios in the financial markets. The model uses data from the futures prices and, using machine-learning methods, such as bootstrap and adjustment nonparametric distributions, selects the time series with more significance to predict the market scenarios, creating a new Index. The new Index can be used to identify the market trend and thus, give order signals to buy and sell selected financial instruments. Finally, we will prove as well that the new indicator can trade autonomously and performs better than passive strategies.

Bell, Lena (from 10-2019, ongoing)

“Improving urban last mile logistics to a “greener”, yet profitable set-up by using big data, simulation and advanced analytics”

During my current research, I am focusing on one overarching question, dividable in three distinctive, yet interconnected papers: “Compared to a highly granular baseline, what are the most effective short-term interventions to significantly reduce CO2 emissions in urban last mile/reversed logistics as well as in national linehaul supply chain, while ensuring customer satisfaction and profitability?” Thus, I am a) establishing a next generation of cross-border corporate CO2 accounting (including a case study) and b+c) deriving an overview on the most effective urban last mile/reverse logistics interventions to reduce CO2 emissions in the short-term (e.g. parcel shops and parcel lockers) by performing a simulation.

Berger, Niklas (from 09-2019, ongoing)

“Downside risk and upside potential in supply chains”

Germany is one of the largest contributors of greenhouse gas emissions worldwide and by far the largest emitter across the European Union. Thus, the German government adopted the “German Climate Action Plan 2050” to achieve greenhouse gas neutrality by the middle of the century. The transport sector is the third-largest producer of greenhouse gas emissions and around 96% of emissions result from passenger cars and commercial vehicles. Based on the latest vehicle registration numbers, almost 100% of registered heavy-duty trucks (HDTs) in Germany run on diesel whereas the share of alternative fuel-powered passenger cars increases steadily. Other challenges are fatalities due to human error and the massive truck driver shortage. Therefore, we aim to assess the future market potential of alternative drivetrains and try to answer the question of how certain factors affect the successful implementation of low emission HDTs in Germany. Furthermore, we intend to shed light on a possible operation of autonomous HDTs in Germany. Our research provides both a practical and theoretical contribution to spur the penetration rate of innovative HDTs. The results of our research are of great importance to truck manufacturers, logistics service providers, policy makers, energy suppliers but also international academics.
Bigdon, Jasmin (from 09-2017, ongoing)

“Customer Value Creation from returns in e-commerce”

Returns in e-commerce are one of the most important drivers for customer satisfaction, customer buying behaviour and customer loyalty in e-commerce. Based on literature reviews and qualitative expert interviews this dissertation project analyses the potential of return policies as well as process quality on creating customer value. The aim of the dissertation is to show a new positioning perspective on the return process as important sales and profitability driver in e-commerce retailing.

Dewan, Novi (from 02-2017, ongoing)

“Scaling Tele-Ophthalmology for Diabetic Retinopathy in Rural India”

India has only 22,000 ophthalmologists (eye doctors). This results in a skewed ratio of 1 ophthalmologist for every 61,000 citizens. This ratio is further skewed in areas that have limited reach of healthcare (rural areas) or lack of infrastructure. Congestion jeopardizes reach for areas that do have access to health care like cities. At 7.9 million folks, India has 20% of the world’s blind population. And 49% of the global diabetic population live in the country. Diabetes can cause an asymptomatic disease (asymptomatic in early stages – implying not known until too late) of the eye called Diabetic Retinopathy, a growing leading cause of blindness in the developed and developing world. WHO says 80% of all blindness can be avoided if detected on time.

Thus instead of waiting for more medical doctors to graduate, we aim to overcome the problem of reach by using a portable ergonomic tele-ophthalmic device with early but developing AI capabilities which enables large scale screening thus early detection of a disease through outreach camps in rural areas.

Novi Dewan teamed up with Prof. Dr. Natarajan, the President of the All India Ophthalmic Society and the recipient of Padmashri/highest civil service award by President of India, and conducted eye screening tests through camps in the Mumbai slums with his team. This helped her identify contextual aspects like behavioral hurdles in community screening, actors needed and device specificity and sensitivity.

Faber, Andreas (from 08-2016 to 10-2020)

“Data analytics in supply chain planning: Applications in intermittent demand forecasting, churn prediction and price discrimination”

The concepts of predictive analytics and big data are commonly used these days, but there is limited empirical research regarding its application and benefits. In addition, many companies still struggle to find relevant and useful applications of data analytics.

Given these challenges, the doctoral thesis provides new insights in quantifying the benefits of new data-driven analytical methods in supply chains. The ambition is to provide insights regarding potential improvements in warehouse operations, customer relationship management and price optimization.

The first paper deals with demand predictions for products with intermittent demand for an online retailer. We develop a method selection forecasting algorithm that leads to significant savings in the warehouse operations through improved storage decisions. The second paper deals with churn prediction in a B2B setting in the logistics industry. The proposed approach allows to combine high predictive performance with interpretability. Thereby, potential churners can be identified early-on with high accuracy and the underlying reasons for the prediction can be understood. The third paper covers price optimization for B2B customers in the logistics industry. We develop a data driven algorithm without price experiments to predict price sensitivities.
Falkenberg, Sven (from 01-2019, ongoing)

“Innovative ideas to deal with complexity in warehouse and distribution”

Supply chains needs to cope with a world of increasing complexity. Our research focuses on 3 innovative ideas within the physical ow of supply chains, namely warehouses and distribution. Each topic shines light on a pressing topic at a different hierarchy level by covering a strategical (rethinking the concept of physical warehouses), tactical (understanding the network impact of closing transport lanes) and operational (predicting breakdowns of material handling equipment) view.

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Furrer, Mariam Alvin James (from 04-2017, ongoing)

“The Impact of Climate Change Related Extreme Events on Supply Chain Management: Assessing the Vulnerability of Supply Chains and Developing Mitigation & Adaptation Strategies for Firms”

Over the last decade, nearly all industries have faced increased competitive pressure in the business environment and globalization of the markets. Vulnerable supply chain networks are becoming an essential topic to tackle. In an era of increased frequency and severity of extreme weather events, Supply Chain Risks induced by climate change extreme weather events is still an emergent field of study especially in Developing countries. Severe and costly disruptions induced by climate change extreme weather events, such as, raw material shortages, production and manufacturing disruptions, longer lead time and others need to be highlighted and analyzed in order to develop suitable adaptation and mitigation strategies.

The research adds to the immature of climate change extreme weather and its impacts on supply chain networks for different industrial sectors. Moreover, it will introduce an empirically validated process aiming for assessing the various impacts of risks induced by climate change risks on supply chain networks. The research will fill the gap between risks induced by climate change and supply chains disruptions. The relation among the previously mentioned variables will be underlined and proposing mitigation and adaptation strategies will be developed.

Using data from different case companies from various industrial sectors located in Egypt will allow an empirical validation of the proposed process for managing climate change induced supply chain risks. Then a causal loop diagram will be developed in order to build a system dynamic model. The model will help to investigate the potential costly disruptions of extreme weather events induced by climate change and resulted supply chain risks affecting the resilience of the supply chain networks, either nationally or globally. The model will help decision makers to be more informative while choosing the appropriate cost-effective adaptation concepts and strategies to reduce the severe impacts of climate change extreme weather events on supply chains. Not only adaptation, but also mitigation strategies will be discussed in the curse of this research. This research is a starting point for further research and investigation in the areas related to supply chain management and risks induced by climate change.
Hess, Alexander (from 07-2016, ongoing)

„Quantitative Models for Prediction, Optimization, and Simulation in Urban Logistics“

Food delivery services and other urban logistics service providers have employed various methods of optimizing the flow of their vehicles in recent years. However, with more and more real-time data (e.g., weather, traffic, ...) available, the overall performance of such optimization systems and thus the customer experience can be improved with more accurate predictions of future demands, traffic jams, and total delivery times. The goal of the research project is to promote the usage of machine learning algorithms in the field of urban logistics. In addition to demand forecasting via machine learning methods, better routing strategies are evaluated, and its potential to optimize capacities is analyzed.

Höhler, Julian (from 05-2020, ongoing)

“Digitalization in the Energy Industry - application of machine learning algorithms for the prediction of congestions in transmission lines”

The share of renewable energies in the German energy mix is increasing and will continue to increase in the future. With the increasing share of renewable energies, the load and load volatility on the transmission lines will increase, leading to more and more line congestions.

Julian’s research project focuses on the application of machine learning and advanced analytics to predict these congestions on the transmission lines. However, many classification algorithms of machine learning assume an equal distribution between classes. This assumption is not true when it comes to predicting transmission line congestion. Therefore, Julian investigates how machine learning algorithms can be adapted to these unbalanced class problems to improve the prediction quality of transmission line congestion.

Kluge, Ulrike (from 07-2018, ongoing)

“Tackling Trends of Future Door-to-Door Travel”

Passengers are essential stakeholders in the aviation sector since they generate the demand for transport products and services (demand side). At the same time, their needs are increasingly individualized. Gaining a better understanding about future passengers’ requirements is crucial for mobility companies to stay competitive, for middle- and long-term planning, and for the innovation or development of products and services that will satisfy customer needs on the prospective travel market. However, for gaining a comprehensive and holistic understanding about future trends, the supply side (including mobility providers such as airlines, airports, or railway) also requires examination. Furthermore, research and the overall mobility industry start to broaden their scope beyond looking only at one mode but integrating the entire travel chain from door-to-door (D2D), considering modes from every travel segment. Hence, railway, busses, private vehicles, air transport but also novel concepts such as sharing mobility are examined.

The overall objective of this dissertation is hence to identify and understand future trends of D2D travel in 2035, on both the demand and supply side. As it can be challenging to look ahead into an uncertain future, the application of methods from the area of futurology are suitable. The first part of this doctoral thesis is based on a Delphi study for the identification of future D2D travel trends. Building on these results and using a machine learning approach, it shall be explored if transport companies along the travel chain are currently considering or already acting upon these identified trends. Lastly, a customer analysis in part three shall complement this trend analysis and provide a third perspective on the identified future D2D travel trends.
Knörrer, Lisa (from 10-2019, ongoing)

“The enablers of successful data strategy realization”

In the coming years, big data will gain more and more foothold in products and services. This expansion will foremost affect traditional industries since they are not only interesting for such technological innovations, but also new competitors with innovative data strategies. The new competition does not only emerge from start-ups but as well from service offerings of other industry leaders, which penetrate new industries through the expansion of their data ecosystems. However, the development of a data strategy creates many challenges for the company. Many companies are starting the journey with costly project that in the majority of cases either yield no return or perform significantly below what was expected. Therefore, there is an apparent problem for companies to formulate and to implement data strategies.

The research focuses on determining what data strategies are, how they need to be formulated and which enablers support a successful implementation. The data collection is based on real-time ethnographic case studies that are performed at a logistics company. The target is to create a model based on interviews, which determines the critical strategy implementation enablers. Also, to limited the bias due to the single case setting and the deep personal emersion in the case, a small corroborative study is performed.

Makowski, Daniel (from 07-2015, ongoing)

“Decision Criterions for Optimal Home Delivery Strategies in the E-Grocery Sector”,

During current COVID situation home delivery services are profiteers of the crisis. Also, the complexity of the last mile remains the biggest challenge. Logistics from distribution centres to the final customer of sensitive products and low volume of grocery deliveries makes home deliveries expensive. Also, major players like Amazon and Rewe entered the market in recent years is still a niche market.

The initial analysis of the German grocery market and expert interviews with managers of German e-grocers showed that, compared to other countries, German e-grocery market is still in its infancies. Main potential identified is, besides the actual delivery and the delivery strategy optimization in order fulfilment, the second major pool of costs in last mile delivery. Storage strategies, considering the special requirements for food storage are not yet investigated in depth. From the expert interviews, two main topics have been identified which could contribute to the current discussion on online ordered groceries. On the one hand the development of optimized, e.g. hybrid delivery strategies and on the other hand research on optimal storage strategies.

Given that a grocery storage requires different areas due to the storage requirements of the products, the simulation shows, that the storage concept is the most important lever to improve the warehouse performance, whereas the size of the individual storage areas plays a minor role. To further improve the storage an area only for high runners can be implemented, whereas the percentage of items stored decreases with an increasing number of total items stored in the warehouse.

As the optimal storage strategy strongly depends on the storage concept and the concept is depending on the customers demand, intelligent forecasting could further reduce storage costs. Analysis based on real demand data analyzed by self-learning algorithms could provide further insights to improve storage strategies.
Peppel, Marcel (from 07-2020, ongoing)

"The future of last mile delivery with focus on stationary and mobile delivery technologies"

The last mile delivery market has experienced significant growth due to rising e-commerce sales in the recent past, which will continue in the future. In combination with other mega trends such as new software and infrastructure technologies as well as sustainability, logistics service providers and municipalities will face major challenges in the upcoming years.

Marcel focuses his research on last mile parcel delivery, investigating the optimal integration of stationary and mobile parcel lockers into the delivery ecosystem. Therefore, he collaborates with a leading European logistics service provider to optimize the environmental and economical fit of parcel lockers into the current delivery environment. Using optimization and machine learning algorithms, he analyzes locker allocation and application strategies.

Preuss-Neudorf, Nicolaus (from 01-2020, ongoing)

“Application of machine learning models on enterprise data in B2B settings”

Nicolaus’ research aims at identifying existing research gaps in the application of machine learning methods on enterprise data in a B2B context, while focusing on the optimization potential, revenue gain and following managerial implications.

The first paper addresses the topic of ETA prediction and vessel scheduling from a supply chain supervisor perspective. He leverages advanced statistics and ML algorithms to predict robust arrival windows on the basis of more than 10 years of historic data. The modeling of such supply chain scenarios based on customer data, thereby indicates the possible optimization potential and revenue gain.

The subsequent projects are in close collaboration with a hidden-champion automotive supplier and focus on churn prediction and customer segmentation. The data collected for this case study concerns a disposable product series in the varnishing industry, sold to B2B clients. It is based upon an implemented loyalty program with high rewards, giving reliable insights into usage statistics down to the individual varnisher level. This enables high predictive performance with interpretability to implement targeted retention measures.

Schlappa, Martin (from 01-2020, ongoing)

“Reinforcement learning in power plants: introducing advanced analytics to support human decision-making”

Power plants, specifically waste incineration plant, are typically run by humans and supported by a certain degree of automation. For instance, operators can manually determine the level of O2 inflows in different parts of the combustion as well as the speed of the waste introduction. These levels can be constantly optimized, yet humans tend to re-evaluate a certain setting only few times an hour. Thus, the combustion processes are usually not fully optimized, as can be seen when different human operators are compared against each other. On top of that, many contradicting goals need to be balanced such as the steam production, emission levels and quality of the combustion.

To overcome this shortfall, a reinforcement learning approach is developed to constantly optimize the process as well as to potentially identify interesting, new settings by trial and error. This approach is selected to balance the contradicting goal and to build a system that can be applied in other plants. Since the real plant cannot be used for such training, a simulation of the combustion processes is built to serve as training environment.
The goal of the research is to show that reinforcement learning agents can be applied to real-life machinery via a simulation and that human decision-making can be improved using machine learning methods. In addition, this research shall investigate the generalizability of this approach and the adaptation of AI techniques in such complex, safety-critical environments.

Viellechner, Adrian (from 08-2018, ongoing)

"Increasing Transparency on Global Cargo Operations in Container Shipping and Air Freight Using Machine Learning Algorithms"

Supply chain disruptions are expected to significantly increase over the next decades. Delays of container vessels are particularly likely to escalate. This can be traced back to higher frequency of extreme weather events and continued growth of shipping resulting in more congestion and thus additional delays. Furthermore, today’s highly unbalanced trade lanes connecting Asia with Europe and North America are anticipated to fundamentally change. With rising wealth in Asian countries, more trade will flow towards Asia. This will lead to reduced amounts of empty containers in Europe and North America which influences the shipping costs for carriers and hence provokes shifts in freight rates.

Optimizing operations by predicting delays and spot rates could result in considerable cost savings. Both academia and shipping industry, however, lack analytical solutions for such predictions. Here, we developed prediction models using machine learning-based regression and classification methods. Regarding the prediction of delays, we obtained best results using neural network and support vector machine with a prediction accuracy of 77% compared to only 59% of a naive baseline model.

Based on both delay and spot rate prediction, shipping players such as sender, carrier, terminal operator, and receiver could benefit from our predictions. Knowing the delays of vessels would help carriers to fine-tune schedules, terminal operators to adjust vessel handling sequences, and receivers to adapt hinterland logistics. Anticipating spot rates would support senders such as commodity suppliers to save costs by optimizing their decision making between conventional bulk cargo and bulk in container. Taken together, we showed that our machine learning-based models enable better prediction of shipping delays as well as spot rates and thus considerable overall cost savings.

Vogel, Simone (from 06-2018, ongoing)

“Customer Integration in the development of Commercial Vehicles”

Integrating customers into the development process is indispensable and is becoming increasingly significant due to the ongoing customization. However, this is enormously complex due to, for example, varying requirements of different departments, often heterogeneous customers with diverse needs and the various challenges in each phase of the product life cycle. This complexity results in implementation difficulties, which has the outcome that in practice there are often only individual and small applications in which the findings are not centrally available to the entire organization. Companies lack efficient mechanisms for the systematic and continuous integration of customers in order to generate benefits and to avoid further complicating their internal processes. A gap was recognized that there is a lack of knowledge management competence to anchor customer know-how in business processes on a persistent basis. These initial findings clearly indicate the need for a comprehensive procedural model for continuous customer integration across all stages of the development process and enabling a persistent knowledge representation. This research gap gives rise to the overarching research question of how a complete process model for customer integration can be designed in order to transfer representative customer knowledge across departments and along the entire design process into the organization and ensure its persistence?

This research question is investigated by means of the Design Research Methodology. First, the status quo and influencing factors in literature and practice are assessed. Subsequently, the problem
understanding is addressed, whereby the requirements for a future customer integration model are represented by means of a metamodel. Based on this, a solution approach is developed using Business Process Modeling, which is finally evaluated qualitatively and quantitatively in a case study. The research project is carried out in close cooperation with a leading Commercial Vehicle manufacturer, as this industry in particular is predestined for customer integration due to a number of factors such as its diverse customer requirements, complex production structures and variant-rich product portfolios.

Weichert, Lothar (from 10-2018, ongoing)

“Evidence based innovations in humanitarian logistics”

Logistics are a crucial part of all humanitarian operations. After a disaster or during a humanitarian crisis, humanitarian logistics ensure the supply of affected populations and support humanitarians in providing their services to these beneficiaries. Latest with the 2004 tsunami in the Indian Ocean and its aftermath, the importance of efficient and effective logistics became apparent to the wider humanitarian community and academics’ research interest was awakened. Over the last 15 years, major humanitarian logistics research has been published. Unfortunately, the humanitarian community only profited to a limited extend from generated insights. Where some results felt trivial to the experienced practitioner, others where beyond what could realistically be implemented in the field e.g. sophisticated statistical optimization models. At the same time, practitioners and researchers keep struggling with the limited availability of data. Lothar's dissertation aims to generate research insights, that are of concrete relevance for practitioners. In close cooperation with humanitarian organizations (Humanité & Inclusion’s Atlas Logistique and the Humanitarian Logistics Association) different aspects of humanitarian logistics are examined. Using objective and quantitative methodologies, humanitarian decision makers shall be supplied with better understanding and even policy recommendations. In doing so, existing academic literature will be complemented and the foundation for further research laid. Specifically, the first sub-project will assess the current state of humanitarian logistics knowledge management using a practitioner survey and provide a suggested prioritization for its future. The second project will quantify the impact of common logistics services for the humanitarian community using agent-based simulation. The third project will co-develop and evaluate a new index for logistics vulnerability. It measures how the local logistical environment affects local populations’ ability to supply themselves or be supplied with essential goods and services. Consequently, Lothar’s doctoral project’s efforts aim to enable better humanitarian logistics, as an academic contribute to humanitarian operations.

Weil, Philipp (from 07-2018, ongoing)

„Seasonal slot scheduling at airports“

My dissertation is dedicated to the area of Seasonal Slot Scheduling at Airports. Slot scheduling refers to the allocation of start- and landing rights at coordinated airports. Through the assignment of a runway slot, the air carrier obtains the permission to use the full range of airport infrastructure necessary to operate an air service at a coordinated airport on a specific date and time, according to the International Air Transport Association (IATA).

The dissertation is split in three parts from which one part is already completed: The first part includes the development of an allocation matrix for an airport. The second part is foreseen to deal with the potential to implement a different allocation pattern based on CO2 emissions, and the third part will address the question whether the implementation of a different allocation pattern can increase airport capacity overall.
Weingarten, Jennifer (from 06-2018, ongoing)

„The value of customer behavior in supply chain management: Predictive analytics applications in demand forecasting“

The dissertation analyzes the use of customer behavior in demand forecasting in three separate research papers. Leveraging data from research partners in the online fashion and construction industry, the potential of the developed prediction models are assessed in three areas of application in supply chain management, namely order fulfillment, order picking, and inventory planning.

Werning, Jan Philipp (from 04-2017 to 10-2020)

„The Transition from Linear to Circular Economy Business Models: Theoretical and Empirical Study of Boundary Conditions and other Effects on the Value Chain“

This dissertation focuses on identifying boundary conditions on business not system level, hindering companies to pursue the transition from linear to circular business models. In addition the effects of the identified boundary conditions shall be quantified through value chain simulations. This study is highly relevant for academics and practitioners, since in both areas a collectively exhaustive list of boundary conditions is not available and understood completely. In the last years the idea of a circular economy, keeping products, at their highest value, as long alive as possible, and using the at their end-of-life as input for new products, emerged and spread quickly. Marco-economic developments, like population and global middle-class growth, are also supporting the need for circular business models. In order to not leave this field to newly emerging start-ups, this dissertation closes the existing research gap on the transition from linear to circular business models.
7 PUBLICATIONS

7.1 JOURNAL ARTICLES


Werning, J. P.; Spinler, S. (2020): Transition to the circular economy on firm level barrier identification and prioritization along the value chain. Journal of Cleaner Production.


7.2 WORKING PAPERS


Soyk, C., Ringbeck, J., Spinler, S. Effects of low-cost, long-haul carriers on North Atlantic airfares.

Strauss, A., Berger, N., Spinler, S. Insights on how budget and mid-range hotels can benefit from available competitor price data.

Falkenberg, S., Spinler, S. The role of novel data in maintenance planning: Combining breakdown predictions with preventive maintenance


Weingarten, J., Spinler, S. The value of clickstream data in product demand forecasting

Weingarten, J., Spinler, S. Using sequential pattern mining to improve demand forecast accuracy

7.3 PAPER PRESENTATION AT CONFERENCES


Kluge, U., Linden, E., Müller, A. (2020). Session Host: Introduction and Moderation of the Special Interest Group: Aviation (joint effort by WHU, University St. Gallen & Bauhaus Luftfahrt e.V.), online


Weichert, L. (2019) EURO HOpe mini-conference University of Agder, Kristiansand, Norway. HLA Knowledge Base – A Knowledge Management System for Humanitarian Logistics

8 EXECUTIVE EDUCATION & CORPORATE CONNECTIONS

8.1 TEACHING

- Campus for Corporate Transformation
- BASF Pathfinder Program: Technology & Data Science

8.2 CORPORATE CONNECTION ACTIVITIES

- Host for NetloP-Seminar (for Logistics Managers) at WHU
- Guest Speaker acquisition for the Campus for Supply Chain Management
9 SERVICES PROVIDED TO THE SCHOOL

9.1 MEMBER OF THE BOARD OF DIRECTORS

Prof. Spinler heads the Center of Digitalization (CoD) at WHU. The center’s activities focus on preparing WHU for the digital transformation in teaching, research and administration. Furthermore, it coordinates activities for executive training in the area of digital transformation. The Digital@Scale project with McKinsey was one offering in this domain. As head of the CoD, Prof. Spinler is also member of the Board of Directors at WHU.

9.2 CAMPUS FOR SUPPLY CHAIN MANAGEMENT

The Campus for Supply Chain Management is a student-led initiative that brings together speakers from industry and academia for German and international business students and young professionals. The 2020 edition of the conference, aptly dealing with resilience in supply chains, had to be cancelled in March 2020. However, the conference did take place in 2021, dedicated to the same topic.

9.3 ONLINE HACKATHON (with D. Faems and C. Schlereth)

As students were somewhat limited in their summer opportunities last year as a consequence of the pandemic, an online hackathon was offered by my colleagues Dries Faems and Christian Schlereth and myself. My challenge asked the students to evaluate AirBnB prices through enhanced analytics and come up with recommendations for the relevant stakeholders.
10 COMMUNITY OUTREACH

10.1 RESPONSIBILITY AND SUSTAINABILITY

Since sustainability should (and eventually will) be engrained holistically in business activities, all teaching as well as research endeavours at our chair show a strong relationship to the topic of sustainability. Some of the lectures are explicitly dedicated to sustainability, others touch on it. Research mostly explores the “planet” dimension of sustainability, for instance the reduction of CO₂ emissions.

10.2 MEMBERSHIPS

- BVL, Bundesverband für Logistik (German Logistics Association)
- DHV, Deutscher Hochschulverband (Association of German Universities)
- GOR, Gesellschaft für Operations Research (German Operational Research Society)
- INFORMS, Institute for Operations Research and Management Science (USA)
- POMS, Production and Operations Management Society
- VHB, Verband der Hochschullehrer für Betriebswirtschaft (German Association of Business Professors)

10.3 REFEREE ACTIVITIES

Prof. Spinler acts as a reviewer for the following journals:

- Decision Sciences
- European Journal of Operational Research (EJOR)
- Management Science
- Operations Research (OR)
- Production and Operations Management Journal
- Transportation Research Part E