Curriculum Vitae

Assoc.-Prof. Mag. Mag. Stefan Haeussler, PhD

PERSONAL DATA

Date of Birth:	June 30, 1984, in Rum
Citizenship:	Austria
Address:	University of Innsbruck, Department of Information Systems, Production and Logistics Management, Universitaetsstrasse 15, 6020 Innsbruck, Austria
Phone:	+43 512 507 73272
Email:	Stefan.haeussler@uibk.ac.at
ORCID iD:	https://orcid.org/0000-0003-2589-1367
Google Scholar:	Stefan Haeussler
Researchgate:	https://www.researchgate.net/profile/Stefan_Haeussler
Scopus:	Stefan Haeussler

RESEARCH INTEREST

My main research interest is on **quantitative methods for decision support** in the areas of **manufacturing planning** and **supply chain management**. My research focuses on **order release**, **lead time management** and **priority dispatching** and their **practical application**. Methodologically, my focus is on **simulation** (discrete event simulation), **optimization** (linear programming), **economic experiments** and **machine learning methods**. Current research projects deal with (i) human ordering behavior within supply chains, (ii) the application of machine learning in manufacturing planning and (iii) the effect of intelligent decision guidance/support on human ordering behavior within supply chains.

MOST IMPORTANT SCIENTIFIC/SCHOLARLY RESULTS ACHIEVED TO DATE

1) **Design and Evaluation of Adaptive Order Release Planning Models:**
   The main task of order release planning is to decide the quantity and timing of releasing orders to the shop floor. In this area, we significantly contributed to the design and development of adaptive order release planning models that can react to changing system states. This was done by *extending state-of-the-art order release models* either by introducing rules that trigger releases when a certain bound is reached (Haeussler et al. 2021) or *using machine learning methods* such as artificial neural networks or reinforcement learning (Schneckenreither, Haeussler, Gerhold 2021; Schneckenreither, Haeussler 2019; Schneckenreither, Haeussler, Peiró 2022).

2) **Understanding the vicious cycle of the Lead Time Syndrome:**
The lead time syndrome describes a positive feedback loop of increased ordering and rising lead times. In our research, we analyzed the *detrimental effects* of this phenomenon (Thürer et al. 2022) and found behavioral causes such as hedging behavior due to various forms of uncertainty (Haeussler et al. 2021).

3) **Increasing applicability of workload control (WLC) order release concepts:**
WLC is a manufacturing planning and control concept that aims for short and predictable lead times by controlling order release and thus the level of Work-In-Process (WIP). We increased the applicability of this concept by (i) *comparing* various *rule-based and optimization-based models* that identify weaknesses and strengths of different models (Haeussler et al. 2020; Haeussler, Netzer 2020), (ii) *evaluating existing concepts* to new *application domains* such as semiconductor industry (Neuner, Haeussler 2020; Neuner et al. 2020) and (iii) *implementing* existing WLC-models *to industry* (Hutter, et al. 2018).

EDUCATION

2020 **Habilitation/Venia for Business Administration**
University of Innsbruck
Cumulative Habilitation: *Applicability and Refinements of Quantitative Operations Management Models for Order Release Planning and Beyond.*

2009 – 2014 **Ph.D. Management**
University of Innsbruck
Committee: Martin Grunow (Technical University of Munich), Hubert Missbauer (University of Innsbruck), Reha Uzsoy (North Carolina State University).
PhD Thesis: *Comparison of two optimization based order release models with fixed and variable lead times and an empirical validation of meta-models of work centres in order release planning.*

2004 – 2010 **Mag. phil. Political Science**
University of Innsbruck
Committee: Reinhold Gaertner, Heinrich Neisser, Fritz Plasser (all University of Innsbruck); Diploma Thesis: *The African American voting behavior in the 2008 presidential elections.*

2004 – 2010 **Mag. rer.soc.oec. Business Administration**
University of Innsbruck
Advisor: Hubert Missbauer (University of Innsbruck); Diploma Thesis: *Empirical Validation of Enhanced Clearing Function Models.*

2007 – 2008 **Year abroad at University of New Orleans, USA.**

Stefan Haeussler

WORK EXPERIENCE

2020 - now **Associate Professor**
Department of Information Systems, Production and Logistics Management, University of Innsbruck.
Advisor and co-advisor of several bachelor, diploma, master and PhD-theses; e.g., in cooperation with Adolf Darbo AG, Audi AG, Hilti AG, Liebherr-Hausgeraete Lienz GmbH, Swarco AG, Swarovski, Tirol Werbung, Voestalpine AG.
Since 2018: Associate Dean of Studies: Master's Programme Information Systems
Since 2021: Member of the Tenure Track (Qualification Agreement – 'QV-Beirat') Advisory Board.

2014 – 2020 **Assistant Professor**
Department of Information Systems, Production and Logistics Management, University of Innsbruck.
Research stay at the North Carolina State University from July – October 2018.

2013 – 2014 **Lector**
Department of Information Systems, Production and Logistics Management, University of Innsbruck.

2009 – 2013 **Research Assistant Praedoc**
Department of Information Systems, Production and Logistics Management, University of Innsbruck.

In 2008 **Intern at the Austrian embassy, Washington, DC, USA**.
Political-, Cultural and Economic and Finance Departments.

SCIENTIFIC ACTIVITIES

- *Ad-Hoc Reviewer*: e.g., 'International Journal of Production Economics', 'International Journal of Production Research', 'IEEE Transactions on Semiconductor Manufacturing', 'Decision Support Systems', 'Omega: The International Journal of Management Science'.
- *Session Chair/Session organizer* at different international conferences: e.g., 'Operations Research OR 2021', 'International Working Seminar on Production Economics', 'IFAC Conference on Manufacturing Modelling, Management and Control'.
- *Co-organizer of international workshops:* 'Innsbruck Workshop on Behavioural Operations and Supply Chain Management'; 'Workload Control – Quo Vadis'; 'Workshop on Production Planning and Scheduling in the Steel Industry'.

RESEARCH GRANTS/ COLLABORATION IN THIRD-PARTY FUNDED PROJECTS

2022 **REINFORCE: Exploiting the potential of reinforcement learning for continuous optimisation of complex and dynamic systems**, **162.491€**. Austrian Research Promotion Agency (FFG), *Project Supervision.*

2016 **Smartproduction 4.0. ICT als Key Enabler zur ganzheitlichen Performance-steigerung fuer hochinnovative Stahlprodukte**, **620.000€**. Austrian Research Promotion Agency (FFG), Project Supervision by Prof. Missbauer, *Key member (scientific).*

2015 **An experimental analysis of the lead time syndrome (LTS), 19.000€.** Grant for young researchers from the University of Innsbruck. *Project supervision.*

2015 **Production smoothing in optimization based order release models. (ProdSmoothOpt), 4.000€.** Grant from D. Swarovski KG. *Project supervision.*

SELECTED PEER REVIEWED PUBLICATIONS

2022 Schneckenreither, M.; Haeussler, S.; Peiró, J. Average reward adjusted deep reinforcement learning for order release planning in manufacturing. *Knowledge-Based Systems, 247, 108765.* https://doi.org/10.1016/j.knosys.2022.108765

Ghadimi, F.; Aouam, T.; Haeussler, S.; Uzsoy, R. Integrated and hierarchical systems for coordinating order acceptance and release planning. *European Journal of Operational Research, in press.* https://doi.org/10.1016/j.ejor.2022.03.057

Thuerer, M.; Fernandes, N.O.; Haeussler, S.; Stevenson, M. Dynamic planned lead times in production planning and control systems: does the lead time syndrome matter? *International Journal of Production Research, in press*. https://doi.org/10.1080/00207543.2022.2034193

Haeussler, S.; Neuner, P.; Thuerer, M. Balancing Earliness and Tardiness within Workload Control Order Release: An Assessment by Simulation. *Flexible Services and Manufacturing Journal, in press*. https://doi.org/10.1007/s10696-021-09440-9

2021 Schneckenreither, M.; Windmueller, S.; Haeussler, S. Smart Short Term Capacity Planning: A Reinforcement Learning Approach. In: *IFIP International Conference on Advances in Production Management Systems, 258-266. Springer, Cham.* https://doi.org/10.1007/978-3-030-85874-2_27

Haeussler, S.; Stefan, M.; Schneckenreither, M.; Onay, A. The lead time updating trap: Analyzing human behavior in capacitated supply chains. *International Journal of Production Economics, 234, 108034*. https://doi.org/10.1016/j.ijpe.2021.108034

Schneckenreither, M.; Haeussler, S.; Gerhold, C. Order Release Planning with Predictive Lead Times: A Machine Learning Approach. *International Journal of Production Research, 59(11), 3285-3303*. https://doi.org/10.1080/00207543.2020.1859634

Neuner, P.; Haeussler, S. Rule Based Workload Control in Semiconductor Manufacturing Revisited. *International Journal of Production Research, 59(19), 5972-5991*. https://doi.org/10.1080/00207543.2020.1797208

2020 Haeussler, S.; Stampfer, C.; Missbauer, H. Comparison of two optimization-based order release models with fixed and variable lead times. *International Journal of Production Economics, 227, 107682*. https://doi.org/10.1016/j.ijpe.2020.107682

Haeussler, S.; Netzer, P. Comparison between rule- and optimization-based workload control concepts: a simulation optimization approach. *International Journal of Production Research, 58(12), 3724-3743.* https://doi.org/10.1080/00207543.2019.1634297

Neuner, P.; Haeussler, S.; Ilmer, Q. Periodic Workload Control: A Viable Alternative for Semiconductor Manufacturing. *2020 Winter Simulation Conference (WSC), 2020, 1765-1776.* https://doi.org/10.1109/WSC48552.2020.9384083

2019 Banken, V.; Ilmer, Q.; Seeber, I.; Haeussler, S. A Method for Smart Idea Allocation in Crowd-Based Idea Selection. *Decision Support Systems, 124, 113072.* https://doi.org/10.1016/j.dss.2019.113072

Schneckenreither, M.; Haeussler, S. Reinforcement Learning Methods for Operations Research Applications: The Order Release Problem. *Lecture Notes in Computer Science, 11331, 545-559.* https://doi.org/10.1007/978-3-030-13709-0_46

Haeussler, S.; Schneckenreither, M.; Gerhold, C. Adaptive Order Release Planning with Dynamic Lead Times. *IFAC-PapersOnLine, 52(13), 1890-1895.* https://doi.org/10.1016/j.ifacol.2019.11.478

Ilmer, Q.; Haeussler, S.; Missbauer, H. Optimal Synchronization of the Hot Rolling Stage in Steel Production. *IFAC-PapersOnLine, 52(13), 1615-1619.* https://doi.org/10.1016/j.ifacol.2019.11.478

2018 Hutter, T.; Haeussler, S.; Missbauer, H. Successful Implementation of an Order Release Mechanism based on Workload Control: A Case Study of a Make-To-Stock Manufacturer. *International Journal of Production Research, 56(4), 1565-1580.* https://doi.org/10.1080/00207543.2017.1369598

2014 Haeussler, S.; Missbauer, H. Empirical validation of meta-models of work centres in order release planning. *International Journal of Production Economics, 149, 102-116.* https://doi.org/10.1016/j.ijpe.2013.08.021

WORKING PAPERS

Banken, V.; Ilmer, Q.; Seeber, I.; Haeussler, S. The Power of Likes - Analyzing Herding Behavior of Crowds in Idea Evaluation. *Working paper*, University of Innsbruck.

Fodor, J.; Schneckenreither, M.; Haeussler, S. Optimal Short Term Capacity Planning in a rolling horizon environment: a comparative study. *Working paper*, University of Innsbruck.

Ilmer, Q.; Haeussler, S.; Missbauer, H. Slab assignment to non-identical reheat furnaces running in parallel mode. *Working paper*, University of Innsbruck.

Ilmer, Q.; Haeussler, S.; Stefan, M. Bachler, S. The missing link in the bullwhip effect in capacitated supply chains: The vicious cycle of the Lead Time Syndrome. *Working paper*, University of Innsbruck.

Ilmer, Q.; Haeussler, S.; Uzsoy, R. Optimization Based Order Release Models in Dual Resource Constraint production systems, *Working paper*, University of Innsbruck.

Neuner, P.; Haeussler, S. Adaptive order release: Should we control or forecast lead times?, *Working paper*, University of Innsbruck.

Neuner, P.; Haeussler, S.; Fodor, J.; Blossey, G. Putting a price tag on hot lots in semiconductor manufacturing. *Working paper*, University of Innsbruck.

Neuner, P.; Ilmer, Q.; Haeussler, S.; Missbauer, H.; Uzsoy, R. Bringing Together what Belongs Together: Combining Optimization- and Rule-based Workload Control Concepts, *Working paper*, University of Innsbruck.

CONFERENCE, WORKSHOP PRESENTATIONS, GUEST LECTURES AND TALKS

2021 Smart short term capacity planning: A reinforcement learning approach. *Advances in Production Management Systems (APMS) Conference*, virtual Nantes, France.

Stefan Haeussler

2020 Periodic Workload Control: A Viable Alternative for Semiconductor Manufacturing, *Winter Simulation Conference, virtual*, Orlando, USA.

Human Decision Making in Systems with Limited Capacity. 1st virtual IFAC World Congress, Berlin, Germany.

Fragstellung trifft Analysemethode- Data Science Projekte in produzierenden KMUs. online seminar organized by the Standortagentur Tirol, Innsbruck.

Integration of Order Acceptance into Optimization Based Order Release models. *21st International Working Seminar on Production Economics,* Innsbruck, Austria.

2019 Adaptive Order Release Planning with Dynamxic Lead Times. *9th IFAC Conference on Manufacturing Modelling, Management and Control*, Berlin, Germany.

2018 Boon and Bane of Big Data for Lead Time Management, *Guest lecture at the North Carolina State University*, Raleigh, USA.

Comparison between Rule- and Optimization based Workload Control Concepts: A Simulation-based Optimization approach, *20th International Working Seminar on Production Economics,* Innsbruck, Austria.

2017 Comparison between Rule- and Optimization based Workload Control Concepts, *International Conference on Operations Research 2017,* Berlin, Germany.

2016 Successful Implementation of an Order Release Mechanism based on Workload Control: A Case Study of a Make-To-Stock Manufacturer, *19th International Working Seminar on Production Economics,* Innsbruck, Austria.

2015 Integration of order acceptance decisions into optimization based order release models: A simulation study, *CORS/INFORMS Joint International Conference,* Montreal, Canada.

2014 Integration of the order entry level into optimization based order release models, *5th Workshop on Young Academic's Management Science,* Graz, Austria.

AWARDS/HONORS

2021 **Scientific Research Award**
Municipal Council of Innsbruck.

2020 **Best student paper award 2020**
University of Innsbruck for: Banken, V., Ilmer, Q., Seeber, I., *Haeussler, S.*, 2019. A method for Smart Idea Allocation in crowd-based idea selection, *Decision Support Systems, 124, 113072.*

2017 Participation at the **6th Lindau Meeting on Economic Sciences.**

2014 **Best student paper award 2014**
University of Innsbruck for: Haeussler, S., Missbauer, H., 2014. Empirical validation of meta-models of work centres in order release planning, *International Journal of Production Economics, 149, 102-116.*

2008 **Performance-based scholarship of the University of Innsbruck.**

Stefan Haeussler

TEACHING EXPERIENCE

2020 – 2022:

Bachelor Programme:

- Four lectures 'Management of productive processes'
- Four proseminars: 'Management of productive processes' (also together with Dr. Hutter)
- Two proseminars: 'Production and Logistic Management I' (together with Neuner, M.Sc.)
- Two lectures: 'Production and Logistic Management I'

Master Programme: 'Information Systems':

- Three seminars: 'Operations Management I: IT-supported Production and Supply Chain Planning - Concepts, Methods and Software'
- Two lectures and seminars: 'Operations Management II: Applying Methods of Operations Management - Optimization, Simulation and Analytics'
- Three seminars: 'Value-Adding Chain Processes in Organizations'
- Three seminars: Business Information Systems

2015 – 2019:

Bachelor Programme:

- Seminar: 'Seminar with Bachelor's thesis'
- Six lectures 'Management of productive processes' (with Prof. Missbauer or Mag. Traugott)
- Three Proseminars: 'Management of productive processes'
- Proseminar: 'Production and Logistic Management I'
- Lecture: 'Production and Logistic Management II'

Master Programme: 'Information Systems':

- Four lectures and seminars: 'Current Topics of Information Systems, especially Global Value Network' (with Prof. Missbauer)
- Five seminar: 'Design of information systems along the value chain'
- Two seminar: 'Value-Adding Chain Processes in Organizations'
- Two seminars: 'Design of information systems along the value chain'

2010 – 2014:

Bachelor Programme:

- 14 Proseminars: 'Management of productive processes'
- Four Seminars: 'Production and Logistic Management II' (also with Dr. Thurnher)

Stefan Haeussler

THESES SUPERVISION

Dissertations

- Main advisor of *Manuel Schneckenreither (*co-advisor Prof. Juanjo Peirò): *Smart Decision Support Tools for Operations Management with a Special Focus on Reinforcement Learning*, completed in 2021.
- Main advisor of Philipp Neuner (co-advisor Prof. Hubert Missbauer): *Applicability and Refinements of Workload Control*, since 2021.
- Co-advisor: Pia Netzer (main advisor Prof. Hubert Missbauer): *Optimization-based Order Release Models – Evaluation and Integration into the Order Entry Level*, since 2021.
- Co-advisor: Coraline Bagy (main advisor Prof. Martin Messner): *Examining the Use of Management Controls in a Multi-Tier Supply Chain*, since 2021.

Master and Bachelor theses

- 38 Diploma and Master theses
- 28 Bachelor theses