

PROF. DR. FRANK THOMAS PILLER

CURRICULUM VITAE

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Academic Positions

- Since 2007 Full Professor of Management (W3, tenured), Chair in Technology and Innovation Management, and Co-Director, Institute of Technology & Innovation Management, RWTH Aachen University, School of Business & Economics, Germany
- Since 2016 Founding Dean, RWTH Business School, an executive education unit of RWTH Aachen (appointed)
- Since 2015 Vice Dean for Strategy & External Relations, RWTH School of Business & Economics, **RWTH Aachen University** (elected in 2015, re-elected in 2018)
- Since 2014 Co-Founder and Academic Director, RWTH Invention Center (INC), part of the RWTH Campus Research Park, together with RWTH WZL, Fraunhofer IPT, KEX AG and more than 50 corporate partners
- Since 2012 Academic Director of the Executive MBA Program, offered by **RWTH Business School**
- Since 2007 Co-Founder, MIT Smart Customization Group, **Massachusetts Institute of Technology (MIT)**, Cambridge, MA, USA
- Aug-Sept 2018 Visiting Professor of Innovation Management, **Chalmers University**, Gothenburg, Sweden
- Feb-Mar 2012 Visiting Professor of Technology Management & Leadership, **Hong Kong University of Science and Technology (HKUST)**, Hong Kong
- Oct 2004 - Feb. 2007 Research Fellow, Massachusetts Institute of Technology (MIT), **MIT Sloan School of Management**, BPS / Innovation & Entrepreneurship Group, Cambridge, MA, USA
- 2000-2004 Position comparable to an "Assistant Professor", Department of Information, Organization & Management (Head: Prof. R. Reichwald), **TUM School of Management, Technische Universität München (TUM)**, Munich, Germany
- 1995-1999 Lecturer and Research Associate, Department of Production and Operations Management, **Julius-Maximilians-Universität Würzburg**, Germany

Academic Education

- July-Aug 2009, Jan. 2010 HBS Global Colloquium on Participant Centered Learning. Intensive professional education program for teaching excellence with the case method. **Harvard Business School**, Boston
- 2001-2004 Habilitation with a thesis on "Innovation and Value Co-Creation: Evidence and Implications of Integrating Customers & Users in the Innovation Process", completed in Sept 2004 at **Technische Universität München (TUM)**, Munich, Germany (*Venia legendi in April 2005*)
- 1995-1999 Ph.D. studies (Dr. rer.pol.) in Business Administration (Production and Operations Management) with a thesis on Mass Customization, **Julius-Maximilians-Universität Würzburg**, Germany (*with highest distinction, "summa cum laude"*)
- 1989-1994 Bachelor and Master ("Diplomkaufmann") in Business Administration (majors: Production & Operations Mgmt, Marketing) at **Julius-Maximilians-Universität Würzburg**, Germany (*Top 1% of the graduating class*)

(1) RESEARCH

Frank Piller's current research focuses on the need of **established corporations and entrepreneurial ventures alike to cope with the challenge of digital transformation and similar disruptive technological innovations**. This includes a growing stream of research on digital business models and the systematic **design of platform-based business ecosystems**, but also research on Leadership for Industrie 4.0 and the establishment of organizational structures and cultures that allow for change. He is the Chairman of a cross-industry group hosted by VDI (Verein Deutsche Ingenieure) to develop standards in the field of platform-based digital business models ("Fachausschuss Geschäftsmodelle für Industrie 4.0"). He has also been elected into the Advisory Council ("Forschungsbeirat") of Germany's **National Platform Industrie 4.0**, where he coordinates a work group on Platform Economics for Industrial Data Applications.

A further major stream of Frank Piller's research is on **innovation interfaces**: How can organizations increase innovation success by designing and managing better interfaces within their organization and with external actors. This stream of research includes topics like **value co-creation with customers/users**, **responsible innovation** by stakeholder involvement, strategies to increase the productivity of technical problem solving by **tournament-based crowdsourcing**, and new **models for knowledge transfer** between universities and industry. This research has also build the foundation to investigate innovative **crowdsourcing based business models of startups** and corporate entrepreneurs alike.

In addition, Frank Piller has a long established research tradition in the field of **mass customization and personalization**, with a focus on investigating **strategic capabilities and business model generation** in this field. This also includes an upcoming larger research stream on the **economic effects of additive manufacturing technologies** ("3D Printing"). At RWTH Aachen, he is a principle investigator in the National Cluster of Excellence on The Internet of Production, focusing on **data-driven business models** for industrial applications.

From a methodological standpoint, Frank Piller's research includes conceptual, qualitative theory-building and quantitative theory-testing publications. Building on his academic background in large institutes of technology (TUM, MIT, RWTH), his research often follows the **design science paradigm**, striving to combine relevance for practice with academic rigor. During his tenure at RWTH Aachen, he has established one of Germany's largest research groups in technology and innovation management (TIM) with **about 30 (FTE) research positions**. The RWTH TIME Institute is supported by **competitive research grants** from the European Community, the Deutsche Forschungsgemeinschaft (DFG), German Federal Ministry of Research (BMBF), and other institutions.

As indicated by a **H-Score of >55**, **about 16,000 citations** of his publications (Google Scholar), and more than 250 general press reports about his studies, Frank Piller's research has attracted broad attention and reception in academia and the management community. Harvard Business Review and McKinsey nominated him as a finalist in their **"Innovating Innovation MIX Challenge"** for his work on internal firm structures for successful open innovation.

Numerous research contracts and consulting assignments have transferred Frank Piller's research into real business impact for the management practice. He has been invited to provide more than 200 keynotes at conferences or business meetings and many research seminars for the faculty of leading business schools around the world.

Research & Publication Impact

- **List of Publications and Google Scholar Citation Impact:** <http://tinyurl.com/piller-pub>
- **ResearchGate Profile:** https://www.researchgate.net/profile/Frank_Piller
- **Press Reports about Frank Piller's Research:** <http://tinyurl.com/y8cx9knb>

Academic Honors and Research Awards

- 2019 **Jürgen Hauschildt Award 2019** for best empirical paper published in 2018/2019 on innovation management, awarded by the TIM Division of the German Academy of Management (VHB), for the paper "Attracting solutions to crowdsourcing", in Research Policy (Feb 2019), *jointly with Patrick Pollok and Dirk Lüttgens*
- 2019 **Appointment offer** of Full Professor of Innovation and Entrepreneurship and **Head of the HPI School of Entrepreneurship** (E-School), **HPI – Hasso Plattner Institute** at Potsdam U and Stanford U (*declined*)
- 2019 **FAMOS Sustainability Award** of the President of RWTH Aachen for continuous engagement for a **"most family friendly work environment"** (on nomination by the RWTH TIM Institute staff)
- 2014, 2015, 2019 Inclusion into **Best Paper Proceedings of Academy of Management** Annual Conference
- 2015 **FAMOS Award** of the President of RWTH Aachen for **creating a research group with the "most family friendly work environment" at RWTH** (on nomination by the RWTH TIM Group staff)
- 2013 Winner of the **Global 2012 PDMA-JPIM Research Competition** and the **2012 Wilemon Award** for the paper project "Managers' attitudes and reactions towards deviant consumer behavior in idea contests" (*jointly with Alexandra Gatzweiler & Vera Blazevic*)
- 2013 **Best Paper Award 2012** for the best paper published in 2012 in the journal 'Die Unternehmung' - Swiss

- Journal of Business Research and Practice', awarded for the paper "From Social Media to Social Product Development", *co-authored by Christoph Ihl and Alexander Vossen*
- 2008 Invited Member to an **Expert Panel on Innovation advising President Horst Köhler** (President of the Federal Republic of Germany)
- 2008 Appointed **RWTH Representative of the German Scholarship Foundation** (Studienstiftung des Dt. Volkes)
- 2007 **Appointment offer of full chaired Professor of Management, Technology & Innovation Management Group, RWTH Aachen University, Aachen, Germany** (*accepted*)
- 2006 Paper "Reducing the Risk of New Product Development" (MIT Sloan Management Review) elected into the **"Top 20 of Articles Chosen by Business School Faculty"** (with S. Ogawa)
- 2006 **Appointment offer of Full Professor of Management, Innovation Management Group, Zeppelin University, Friedrichshafen, Germany** (*rejected*)
- 2000 **Poco-Handels-Preis of the University Witten-Herdecke** for the book "Mass Customization"
- 2000 **First Price of the Stiftung Industrieforschung** for the Ph.D. thesis
- 1999 **Wolfgang-Ritter-Preis for Scientific Contributions in Management Research** for the Ph.D. thesis
- 1991 Fellow of the **German Scholarship Foundation** (Studienstiftung des deutschen Volkes)

Research Grants and Contracts

Under Frank Piller directorship, the RWTH-TIM Group has been receiving **competitive (peer-reviewed) research grants of about \$0.5 to 1 million annually** since 2007. A special focus of the group are high profile **interdisciplinary projects**, including the role of a Primary Investigator in a **Cluster of Excellence ("Exzellenzcluster")** within the German Exzellenzinitiative; a co-directorship of a **DFG Graduate School ("Graduiertenkolleg")**, the coordinator role of a **DFG Research Cluster** on Technology Transfer, and the scientific leadership of several large-scale projects in the **European Framework Programs**. Funding organizations supporting RWTH-TIM include the European Community, Deutsche Forschungsgemeinschaft (DFG), BMBF, BMWi, AIF, VDMA-FVA, Volkswagen Stiftung, and others.

Recent competitive (peer-reviewed) research grants (selection)

- 2020-2024 (2) *Bundesministerium für Wirtschaft (BMWi): SPAICER: Skalierbare adaptive Produktionssysteme durch KI-basierte Resilienzoptimierung* (grant for RWTH-TIM institute: €800K)
- 2019-2020 (2) *Ministerium für Wirtschaft & Digitales NRW: Reallabor Blockchain NRW* (grant for RWTH-TIM: €70K)
- 2019-2026 (1) *DFG / German Excellence Initiative: Excellence Cluster "Internet of Production":* Research Domain Coordinator (CRD D), principal investigator, and member of steering committee (approx. €65mio, grant for RWTH-TIM: €2.1 mio)
- 2019-2020 (1), (2) *Ford RWTH Research Alliance: Blockchain for Sustainability* (Piloting of block-chain based fleet monitoring solution) (grant for RWTH-TIM: €180K)
- 2008-2018 (1) *DFG / German Excellence Initiative: Interdisciplinary Management Factory*, Project house of the RWTH School for Business & Economics, 2008-2018, Initiator, coordinator and spokesperson of the project house (grant for RWTH School: approx. €8.5 million)
- 2016-2018 (2) *Bundesministerium für Forschung (BMBF): ProData* (Development of a platform for industrial data) (grant for RWTH-TIM: €490K)
- 2016-2018 (2) *Bundesministerium für Wirtschaft (BMWi): Servicefactory Sports 4.0* (Development of a generation of smart products and smart services in the sports good industry) (grant for RWTH-TIM: €600K)
- 2012-2018 *DFG / German Excellence Initiative: Excellence Cluster "Production Technology for High-Wage Countries ":* Principal investigator and task leader, (grant for RWTH-TIM: €500K+)
- 2015-2017 (1), (2) *Ford RWTH Research Alliance: Business Model Innovation for Mobility* (Developing a methodology and their implementation in different pilots to create an innovation system for Ford to systematically develop smart mobility services globally) (various grants for RWTH-TIM: >€800K)
- 2015-2017 (1) *Stifterverband: The Front End of Innovation in eLearning* (Systematic development of a research methodology to better understand needs and demands of users of eLearning/MOOCs) (grant for RWTH-TIM: €150K)
- 2015-2017 (2) *AIF/Bundesministerium für Wirtschaft (BMWi): Open Darkness* (Managing the challenges of open innovation implementation for SMEs) (grant for RWTH-TIM: €250K)
- 2015-2017 (2) *AIF/Bundesministerium für Wirtschaft (BMWi): EMILIA* ("Managing Disruptive and Business Model Innovation") (RWTH-TIM: €300K)
- 2014-2017 (1), (2) *European Commission: Project SMC-Excel* ("Sustainability & Mass Customization – Establishing a system innovation") (grant for RWTH-TIM: €300K)
- 2014-2016 (1), (2) *AIF/Bundesministerium für Wirtschaft (BMWi): No-NIH* ("Preventing "Not-Inventing-Here": Attitude measuring and development of counter measures to prevent barriers to knowledge transfer ") (grant for RWTH-TIM: €320K)

- 2011-2014 *German Ministry for Research (BMBF): Project KUMAC* ("Kunden als Wertschöpfungspartner bei Mass- Customiza- tion-Leistungen) (grant for RWTH-TIM: €450K)
(1), (2)
- 2012-2018 *DFG / German Excellence Initiative: Excellence Cluster "Production Technology for High-Wage Countries "*: Principal investigator and task leader, (grant for RWTH-TIM: €500K+)
- 2008-2018 *Deutsche Forschungsgemeinschaft (DFG): Graduate School "Anlaufmanagement"*: Participation in doctoral school on innovation launch and production ramp-up (grant for RWTH-TIM: €600K+) (*Co-Director ("Sprecher")*)
(1)
- 2010-2012 *European Commission: Research Grant "Nano.Com: Lowering Barriers for Nanotechnology Commercialization via Open Innovation"*: Methods of open innovation and broadcasting of search approach for technology transfer (7th framework program, EU FP7-NMP2009-CSA3, Networking activity, grant for RWTH-TIM: €100K)
(2)
- 2010-2013 *European Community / NRW Ziel.2 Program: Research Grant "EMOTIO II- Embedded Open Toolkits for User Innovation"* Piloting of smart products that allow the adoption of their characteristics in the user domain (grant for RTWH-TIM group: 200K)
(2)
- 2009-2013 *European Community / NRW Ziel.2 Program: Research Grant "OPEN-ISA- Open Platforms for Service Innovation in the Senior Market"* Development of customer idea platform for senior citizens (grant for RWTH-TIM: €480K)
(1), (2)
- 2009-2011 *Deutsche Forschungsgemeinschaft (DFG): Research Grant "MATRIX - New Methods for Successful Technology Transfer"* Transfer of broadcasting of search approach on technology transfer (grant for RWTH-TIM: €180K)
(1)
- 2008-2010 *VDMA: Research Grant "FVAcensive"* Open innovation / Development of open innovation platform for German Machinery Association (grant for RWTH-TIM: €180K)
(1), (2)
- 2007-2011 *Bundesministerium für Forschung (BMBF): Project INTEGRO,,Open Innovation Readiness"* Development of a measurement instrument to evaluate a firm's readiness to employ open innovation (grant for RWTH-TIM: €210K)
(2)
- 2009-2012 *European Commission: 7th Framework Program, SME Project (IP) REMPLANET: Resilient enterprise structures for mass customization*, (grant for RWTH: €380K), Scientific coordinator and work package leader
(2)
- 2008-2011 *European Commission: 7th Framework Program, SME Project (IP) SERVIVE: Service Oriented Intelligent Value Adding Network for Clothing-SMEs Embarking In Mass Customization*, (grant on mass customization research for RWTH: €410K), Scientific coordinator and work package leader
(2)

(1) **Project leadership**: Responsible for designing, drafting and presenting proposal for funding agencies; coordination of scientific research & work packages; managing milestones and project execution, dissemination and utilization of results.

(2) **Industry collaboration**: Project in close cooperation with industrial and/or service companies, in addition to cooperation with other research entities as part of the project consortium.

Technology Transfer: Spin-off Companies & Board Positions

Frank Piller has always strived to connect his academic research with strong interactions with practice. Hence, he has consulted and delivered executive workshops for many DAX30 and Fortune 500 corporations, including **Adidas, Audi, Bertelsmann, BMW, Daimler, Dell, ExxonMobil, Infineon, J&J, Lego, Mars, Sears, Siemens, Unilever** or **Volvo**.

He also transfers his research into practice as a co-founder, investor, member of the Board of Directors ("Aufsichtsrat"), or scientific adviser of several technology companies. At the same time, these corporate engagements provide a unique input for his research, giving access to original data and relevant management questions. His current company engagements include positions at

- **Carpus & Partner AG**, Aachen (Architecture and engineering firm with a focus on large scale R&D infrastructures);
- **Dialego AG**, Aachen (provider of advanced market research techniques for new product development in FMCG);
- **Hyve AG**, München (German market leader for co-creation and open innovation),
- **corpus.e AG**, Stuttgart (manufacturer of 3D scanning solutions and mass customization toolkits);

Current active larger personal investments and entrepreneurial engagements are in the following ventures:

- **Doob AG**, Düsseldorf (3D Printing and 3D Modelling, becoming a globally leading platform for human avatars);
- **Combeeneration**, Austria (leader in online configuration and "configuration as a service" technology)
- **Think Consult**, München (process management and late-stage testing of Apps and similar applications for TelCos, automotive, and media companies).

Scientific and Industry Boards ("Fachbeiräte")

In addition, Frank Piller serves (by invitation or as an elected member) on several scientific and industry boards of Industry Associations, steering the research landscape in these domains.

- Since 2019 **PDMA Outstanding Corporate Innovator (OCI) Award**, Member of the selection committee (the OCI is awarded since 35 years and considered to be the world's most established innovation award)
- Since 2018 **ACATECH Plattform Lernende Systeme**: Member of the Working Group "Business Model Innovation" of Germany's National Platform for Artificial Intelligence (appointed)
- Since 2017 **ACATECH Plattform Industrie 4.0**: Member of the Highest Advisory Board ("Forschungsbeirat") of

	Germany's National Platform for Industrie 4.0 (elected)
	Member of the Working Group "AG 6: Business Model 4.0" (appointed)
Since 2015	VDI Conferences Industrie 4.0: Member / Head of the Program Committee, conference co-chair (appointed)
Since 2015	IMP³rove – European Innovation Management Academy EWIV: Academic representative in the Advisory Board (an initiative by the European Commission to improve innovation performance of European SMEs)
Since 2014	Verein Deutscher Ingenieure (VDI): Head of the Fachausschuss "Business Model Innovation for Industrie 4.0"
Since 2014	Member of the RWTH Innovation Board , providing strategic advice to the president of the RWTH on technology transfer, IP contracts, strategic innovation management
2014	German Ministry for Research (BMBF): Head of the Academic Review Committee of the Research Framework Program "Kompetenzentwicklung und Innovative Arbeitsgestaltung"
Since 2012	Aachener Innovationspreis: Member of the selection committee of one of the largest innovation awards for German industry
Since 2010	Permanent member of the evaluation board for Ph.D. scholarships of the Studienstiftung des Deutschen Volkes
2011-2014	ACATECH – Akademie der Technikwissenschaften: Mitglied des Fachbeirats Produktentstehung

(2) TEACHING & ACADEMIC SCHOLARSHIP DEVELOPMENT

Frank Piller has been teaching since 1997 to very different audiences, including undergraduates, graduate students, postgraduates, managers, and top executives, both in-class and in-company. He has been consistently delivering a highly satisfactory learning experience to his students, achieving **teaching evaluations in the top 10% percentile of the evaluation scheme**. Students regularly evaluate his lectures as "*demanding*" and "*leading-edge*", but "*joyful to participate*", "*very interactive and participate-centered*", and "*a great experience*".

He has co-initiated and developed different elective courses to disseminate the findings of his research for graduate and MBA students. Especially his class modules on open innovation and mass customization have been adopted by many leading international business schools, making him a successful visiting professor in top executive education programs around the world. Since April 2012, Frank Piller has been appointed as the **Academic Director of the RWTH Executive MBA (EMBA)** in General Management.

Frank Piller is an acclaimed speaker at management conferences and in Executive Education programs around the world. He has been elected "MBA Teacher of the Year" at TUM Business School in 2001 and 2006, and is the only professor at RWTH Aachen who has received RWTH's highest price of teaching excellence two times (2010 and 2015).

Since 2011 he is an active advocate of introducing **Massive Open Online Classes (MOOC)** and **Serious Gaming** at RWTH Aachen to provide a better and more scalable teaching experience for large-scale undergraduate classes for interdisciplinary audiences. He has been **the first European professor** offering external participants the opportunity to gain **ECTS teaching credits** in an online MOOC program (in partnership with iversity.org).

Awards for Teaching Excellence

2015	RWTH Award of Teaching Excellence 2015 (Nomination by the RWTH Vice President for Academic Affairs) together with Malte Brettel for teaching innovation by blended and game-based learning
2012	RWTH Exploratory Teaching Space Award for Innovation in Teaching in form of an ETS grant for the project " Flipping the ABWL Classroom " to turn a core bachelor course into a MOOC.
2010	RWTH Award of Teaching Excellence 2010 (Nomination by the Student Bodies ("Fachschaft") of the Schools of Business and Engineering), central award for teaching excellence by the President of RWTH Aachen University.
2006	Elected "Best Lecturer" in the TUM Executive MBA program (out of 80 lecturers)
2002	Best Lectureship Award of the TUM MBA Class of 2001

Textbooks

- Frank Piller, Christoph Ihl, Kathrin Möslein und Ralf Reichwald: Interaktive Wertschöpfung Kompakt. Wiesbaden: SpringerGabler 2017 (includes an online co-creation site to develop this book further with 1000s of participants).

- Frank Piller (Hg.): Einführung in die Betriebswirtschaftslehre. Ein Reader zur Vorlesung an der RWTH Aachen. Wiesbaden: Springer-Gabler. *Jährlich aktualisierte Auflage, 2007-2012.*
- Ralf Reichwald & Frank Piller: Interaktive Wertschöpfung: Open Innovation, Individualisierung und neue Formen der Arbeitsteilung, 2 Auflage: Wiesbaden: Gabler 2009.
- Frank Piller (Editor): Principles and Practices of Technology and Innovation Management: A Reader. New York / London: McGraw-Hill Primis 2008.

Undergraduate & Graduate Teaching at RWTH Aachen, School of Business, Germany (since 2007)

- Principles of Business Administration, 15 sessions core course, 2+2 SWS / 5 ECTS credits (undergraduate level students of business administration and industrial engineering / engineering management) – *Delivered as a "flipped class" in form of a MOOC with video lectures, online eLearning, and interactive lectures since 2012.*
- Strategic Technology Management, 30 sessions elective course, 3+1 SWS / 5 ECTS credits (advanced level students of business administration and industrial engineering)
- Managing the Innovation Process, 30 sessions elective course, 3+1 SWS / 5 ECTS credits (advanced level students of business administration and industrial engineering)
- Principles of Innovation Management: A Culture & People Perspective in Innovation, 15 sessions core course, 2 SWS / 5 ECTS credits (Master of Science / graduate level students of business administration and engineering)
- Interactive Value Creation: Innovations in Organizing the Division of Labor, 15 sessions elective course, 3+1 SWS / 5 ECTS credits (Master of Science / MBA / graduate level students of business administration and industrial engineering)
- Doctoral Seminar in Innovation & Technology Management, 15 sessions elective course, 1 SWS / 5 ECTS credits (graduate level, PH.D. Students)

Undergraduate & Graduate Teaching at Technische Universität München, Germany (1999-2004)

- Principles of Business Administration for Engineering Students, 15 sessions core course, 2 SWS / 4 ECTS credits (undergraduate level students of engineering)
- Fundamentals of Organization & Management, 15 sessions elective course, 2 SWS / 6 ECTS credits (MBA level)
- Mass Customization and Open Innovation, 15 sessions elective course, 2 SWS / 6 ECTS credits (MBA level)

Executive Teaching at RWTH Aachen (since 2007)

Leadership roles:

- **Academic Director of the EMBA program,** offered by RWTH Aachen, fully accredited by AACSB and FIBAA (since 2012)
- **Founding Dean of the RWTH Business School GmbH,** a professional education unit for programs at the intersection between management and technology at RWTH Aachen University: Academic and program leadership (since 2016)

Teaching modules:

- **Course Head and Lecturer** for core program module of the RWTH EMBA "**Strategic Technology Management**", (Executive Master Level, 5 credits)
- **Course Head and Lecturer** for the RWTH Executive Programs "**Business Model Innovation**" and "**Strategic Innovation Management**", offered as EMBA electives, Inhouse- and Open-Enrollment-Programs (Executive Master Level, 5 credits)

Executive Teaching at Other Universities

- Hong Kong University of Science and Technology (HKUST): **Module "Industry 4.0"** in the **Global Executive MBA, 2020**
- Fraunhofer Academy: **Internal Development Program "Forschungsmanager"**. Two teaching modules: "Fraunhofer Competence Framework" and "Open Innovation & Technology Transfer", *annually since 2016*
- The Leadership Network: **Leading the Factory of the Future.** 3-Day Executive Program on C- and SVP-level on Opportunities and Challenges in Industrie 4.0, *annually since 2015*
- Hong Kong University of Science and Technology (HKUST): **Technology, Leadership & Entrepreneurship. Capstone Class for M.Sc. and Ph.D. students of the Fong Ying Tung Graduate School, 2012 (FY5001)**

- Goethe Business School, Universität Frankfurt: **Innovation & Technology Management**. Core Class in Full Time MBA Program, *annually 2009-2012* (MBA Student Level, 5 credits)
- IE Business School (Instituto Impresa, Madrid): **Building the Customer Centric Organization**, Co-Director / Lead Lecturer in this Executive Program, *periodically since 2007*. (Executive Level, Open Enrollment Course)
- Massachusetts Institute of Technology (MIT): **The MIT Smart Customization Seminar**, *bi-annually since 2008* (Executive Level, Open Enrollment Course)
- Technische Universität München: **Customer-Centric Value Creation by Mass Customization**, Teaching Module for the Executive MBA Program on "Innovation and Leadership", Munich, *2007-2014* (Executive Master Level, 3 credits)
- Hochschule Luzern, Switzerland: **Customer Co-Creation**, Program module in consecutive master program on strategic communications management, *2010-2016* (Executive Master Level, 3 credits)
- Vlerick Business School, Leuven, Belgium: **Strategies for Managing Long Tail Markets**, Teaching Module for the Executive Master Program in Supply Chain Management, *2008-2015* (Executive Master Level, 2 credits)
- Wirtschaftsuniversität Wien: **Marketing of Innovation - Mass Customization**. Teaching Module for the Executive Master Program in Technology Management, Vienna, *2006-2014* (Executive Level)
- Technische Universität München: **Customer-Centric Value Creation: Mass Customization and User Innovation**: Teaching Module for the Executive MBA Program "Communicate!", Munich, *2004-2007* (Executive Master Level)
- Massachusetts Institute of Technology (MIT): **MIT Sloan School of Management: In-class teaching modules** for Managing Innovation: Emerging Trends (15.352), Innovation in the Marketplace (15.840), Generation of New Product and Service Concepts (15.356)

Executive Teaching and Coaching within Corporate (Inhouse) Workshops

Frank Piller has developed several **executive class modules** in the fields of digital transformation, leadership for the factory of the future, open innovation, and mass customization which have been adopted by many leading international business schools, making him a demanded visiting professor in top executive education programs around the world. He has delivered customized **executive workshops** delivered for many Dax30 and Global 500 companies on topics like technology and innovation, general management, managing disruptive change, business model innovation and customer-centric value creation. In addition, he has coached and mentored more than 50 **entrepreneurs in high-tech start-up companies** in Europe and North America, mainly in the field of mass customization and crowdsourcing.

Placement of Ph.D. students and research fellows in academia

- [1] *David Antons*: Associate Professor (tenured) at RWTH Aachen University
- [2] *Christoph Ihl*: Full Professor of Innovation & Entrepreneurship, TU Hamburg-Harburg
- [3] *Wolfgang Gruel*: Full Professor of Digital and Mobility Innovation, Stuttgart Media University
- [4] *Jermain Kaminski* Assistant Professor of Innovation and Entrepreneurship. Maastricht University, School of Business & Economics
- [5] *Stephan Hankammer*: Junior-Professor for Sustainable Management, Alanus University of Arts and Social Sciences, Alfter
- [6] *Dennis Hilgers*: Full Professor of Public Innovation and Public Administration, Kepler Universität Linz
- [7] *Robin Kleer*: Associate Professor (tenured) at Vlerick Business School, Brussels
- [8] *Sebastian Kortmann*: Associate Professor (tenured) at VU Amsterdam
- [9] *Alexander Vossen*: Junior-Professor of Entrepreneurship, Universität Siegen
- [10] *Andy Zynga*: Professor of Practice in Strategy and Innovation, Maastricht School of Management (MSM), Maastricht (2016-2019)

Lead Supervisor of Ph.D. Students at RWTH Aachen*

Work in progress (expected year of graduation):

- [1] *Valerie Starke*: Social capital in platform-based innovation ecosystems (2022)
- [2] *Colin Schulz*: Innovation for Smart Products (2022)
- [3] *Lukas Moschko*: Change and Adaptation in Industry 4.0 (2021)
- [4] *Marc van Dyck*: Platform-based Business Models in Industrial Data Ecosystems (2021)
- [5] *André Witzel*: Community co-creation and platform dynamics (2021)
- [6] *Hannah Fabry*: Business model change in established industries (2021)
- [7] *Kathrin Treuting*: Startup Events and their Influence on the Startup Scene (2020)
- [8] *Anja Leckel*: A Social Capital Perspective on Open Innovation (2020)

- [9] *Sebastian Brenk*: Business Model Innovation (2020)
- [10] *Ning Wang*: Embedded toolkits and customization via online toolkits (2020)
- [11] *Fabian Louwen*: Mapping Business Model Evolution in the German Press Industry (2020)

Finalized:

- [1] *Ruth van Bracht (geb. Jiang)*: Managing Disruptive Technologies: the case of Additive Manufacturing (2019)
- [2] *Alexandra Gatzweiler*: Deviant Behavior in Customer Ideation Contests: Essays on Co-Creation with Consumers (2019)
- [3] *Christian Burmeister*: Business Model Innovation and Open Value Creation (2019)
- [4] *Jermain Kaminski*: Essays on Crowdfunding and Innovation (2019)
- [5] *Stephan Hankammer*: Essays on Customized and Collaborative Value Creation from the Perspective of Sustainability (2018)
- [6] *Morgane Benade*: Essays on Smart Customization: Towards a Better Understanding of the Customer's Perspective on Smart Customization Offers (2018)
- [7] *Patrick Pollok*: Three Essays on Crowdsourcing for Technical Problem Solving (2017)
- [8] *Theresa-Marie Dorothea Myskovzsky von Myrow*: Teamwork during Innovation Projects: The Effects of Diversity, Participation, and the Organizational Context (2017)
- [9] *Volker Bilgram*: Understanding the Crowd – How to Construct the Crowd and Manage Participants in Customer Co-Creation (2017)
- [10] *Andy Zynga*: Broadcast Search via Open Innovation Intermediaries (2015)
- [11] *Christian Weller*: Economic Perspectives on 3D Printing (2015)
- [12] *Philip Müller*: Innovation in Networks: Cooperation Design. The Example of Electric Vehicle Development (2015)
- [13] *Moritz Wellige*: High Product Variety and Company Performance { Organization and Configuration of Strategic Capabilities (2015)
- [14] *Kathleen Diener*: Organizing Collaborative Innovation: Studying the Process of Intermediaries for Open Innovation (2014)
- [15] *Frank Steiner*: Solution Space Development for Mass Customization: Continuous Product Change on Production Ramp-Up (2014)
- [16] *Claudia Jooß*: Gestaltung von Kooperationsprozessen interdisziplinärer Forschungsnetzwerke (2014)
- [17] *Iana Kourisis*: App Platforms as Two-Sided Markets: Analysis and modeling of App distribution platforms for mobile devices (2014)
- [18] *David Antons*: Discrimination of external knowledge in R&D: Development of an IAT-based measurement (2013)
- [19] *Philipp Wagner*: Open innovation and organizational alignment (2013)
- [20] *Alexander Vossen*: Essays on External Ideation: Exploring Innovative Online Consumer Behavior (2013)
- [21] *Thorsten Harzer*: Strategic capabilities for mass customization (2013)
- [22] *Wolfgang Gruel*: Individual absorptive capacity in open innovation (2013)
- [23] *Uwe Gross*: Organisationstheoretische Aspekte des Produktionsanlaufs von Neuprodukten (2012)
- [24] *Tobias Adams*: Evaluating ideas in the innovation process; An empirical analysis of social biases in ideation (2012)
- [25] *Tina Burkhart*: Internal capabilities for open innovation (2010)

* *Note*: Given the size of our RWTH Institute, Ph.D. students are mentored by a team of "daily supervisors" (post-docs and assistant professors)

Co-Supervisor: Co-evaluator of about 5-6 Ph.D. theses p.a. at RWTH Aachen's School of Business & Economics

Co-Supervision of (interdisciplinary) Ph.D. Theses at Other Universities & RWTH Schools (selection)

- *Sarah Güsken*: From Local Trade to E-Commerce – An Empirical Study for Business Model Innovation in the Grocery Sector. **RWTH Aachen**, Interdisciplinary work with **Prof. Sabrina Jeschke**, *School of Engineering* (2020)
- *Nadine Escoffier*: How to implement the wisdom of crowds via crowdsourcing as an efficient strategy to answer the challenges of the organization in the digital age? **Université de Nice**, Sophia Antipolis, *Graduate School of Management* (2020)
- *Juan R. Campos*: Impact of internal idea management initiatives on the development of an innovation culture in large organizations. **Universidad Autónoma de Madrid**, School of Business & Economics (2018)
- *Andreas Pfeiffer*: Service-oriented Business Model-Framework –Geschäftsmodelle in digitalen Ökosystemen am Beispiel Elektromobilität, **RWTH Aachen**, Interdisciplinary work with **Prof. Jarke**, *School of Computer Science* (2018)
- *Alexander Lang*: Implementierung von Open Innovation in KMU, **TU München**, Interdisciplinary work with **Prof. Lindemann**, Fak. für Maschinenwesen (2017)

- *Robert Ciuchita*: User Engagement With Digital Service Innovation, Dissertation, Department of Marketing & Supply Chain Management, **Maastricht University**, School of Business and Economics (2016)
- *Cathrin Wesch-Potente*: Strukturelle Synchronisationsmechanismen für die Fabrikplanung zur Steigerung der Effizienz im Planungsprozess. **RWTH Aachen**, Interdisciplinary work with **Prof. Günther Schuh**, *School of Engineering* (2014)
- *Massimo Bianchini*: Industrious design: The role of design in the evolution of (micro)production models enabled by the hybridization of individuals and organizations, **Politecnico di Milano**, Interdisciplinary work with *School of Design* (2014)
- *Golboo Pourabdollahian*: Qualitative Modeling of a Dynamic Sustainable Mass Customization Business Model. **Politecnico di Milano**, Interdisciplinary work with **Prof. Mario Taisch**, *Dept. of Industrial Engineering & Management* (2014)
- *Guillermo Alonso*: Specialization, task variety and knowledge worker productivity in software maintenance, DBA thesis, **IE Business School**, Madrid (2014)
- *Zhang Xiaojin*: Data-driven process redesign to enable mass customization of healthcare, **Nanyang Technological University**, Interdisciplinary work with *School of Mechanical and Aerospace Engineering*, Singapore (2013)
- *Jingshu Du*: Open innovation in SMEs. **Hasselt University** (2013)
- *Thomas Linner*: Mass customization in architecture. **TU München**, Interdisciplinary work with *School of Architecture* (2013)
- *Ryan Chin*: Grammers for Product Architecture for Mass Customization. **Massachusetts Institute of Technology**, Interdisciplinary work with *MIT Media Lab / School of Architecture and Planning* (2012)
- *Henry López Vega*: Open Innovation: Organizational Practices and Policy Implications, **ESADE Business School**, Barcelona (2012)
- *Peter Burggräf*: Wertorientierte Fabrikplanung, **RWTH Aachen**, Interdisciplinary work with *School of Engineering* (2012)
- *Karri Mikkonen*: Exploring the Systemic Value for Customer in Integrated ICT Offerings, School of Business. **Tampere University of Technology** (2011)
- *Clemens Frederick Köhler*: From algorithms to interactions: An investigation of effective communication and design of interactive decision aids. School of Business & Economics. **University of Maastricht** (2010)
- *Christoph Rimpau*: Wissensbasierte Risikobewertung in der Angebotskalkulation für hochgradig individualisierte Produkte. **TU München**, interdisciplinary work with *School of Engineering* (2010)
- *Katja Hutter*: Co-creation, collaboration and the creative potential of the crowd: The code of practice for community-based innovation. **Universität Innsbruck** (2010).
- *Erik Oestreich*: Konzeption eines Konfigurationssystems für die designbezogene Individualisierung ausgewählter Komponenten komplexer technischer Produkte. **Technische Universität Chemnitz** (2009).
- *Christoph Steger*: Segmentierung oder Individualisierung? Ein Vergleich von Produktstrategien zur Befriedigung heterogener Kundenbedürfnisse. **Wirtschaftsuniversität Wien** (2008)
- *Nizar Abdelkafi*: Variety-Induced Complexity in Mass Customization: Concepts & Management. Technische **Universität Hamburg-Harburg** (2008)
- *Martin Schreier*: Active Customer Integration in the Design and Marketing of New Products (Habilitation thesis) **Wirtschaftsuniversität Wien** (2007)
- *Massimiliano Ruffo*: Implications of Rapid Manufacturing on Management. **Loughborough University** (2006)
- *Sri Hartati Kurniawan*: Consumer Decision-Making in Product Selection and Product Configuration Processes. **Hong Kong University of Science & Technology**, Interdisciplinary work with *School of Engineering* (2004)

(3) ACADEMIC COMMUNITY SERVICES

Affiliation with Scholarly Associations: Academy of Management (AOM); Association to Advance Collegiate Schools of Business (AACSB); Erich-Gutenberg-Arbeitsgemeinschaft Köln e.V.; European Academy of Management (EURAM); ISPIM (International Society for Professional Innovation Management); Verband der Hochschullehrer für BWL (VHB); Product Development Management Association (PDMA).

Positions held:

VHB: Division Head (elected) of the Technology, Innovation, Entrepreneurship (TIE) Division, VHB, 2015-2017

PDMA (Product Development Management Association):

- **Board Member** (invited): Committee for Academic Strategy, reporting to PDMA's VP of Academics, 2019-2020;
- **Selection Committee** for the **Outstanding Corporate Innovator Award**, since 2019

AACSB: Review committee member of "**2020 Innovation that Inspire Challenge**" realizing AACSB's Collective Vision for Business Education, 2019-2020

Journal Reviewer: Business Research; California Management Review; Decision Support Systems; Decision Science; Die Betriebswirtschaft (DBW); European Management Journal; Electronic Markets; IEEE Transactions on Engineering Management; Industrial and Corporate Change; International Journal of Industrial Engineering; International Journal of Technology Management; International Journal of Production Research; Journal of Production Economics; Journal of Marketing; Journal of Market-Focused Management; Journal of Product Innovation Management (member of the editorial board); Journal of Operations Management; Long Range Planning; MIT Sloan Management; Org Science; Production Planning and Control; R&D Management; Research Policy; Die Unternehmung; Technology Forecasting & Social Change; Technovation; Zeitschrift für Betriebswirtschaftslehre (ZFB)

Conference Chair

- **Open & User Innovation Conference (OUI):** Founding co-chair & track chair (annually since 2003), *with Eric von Hippel, MIT, Karim Lakhani, HBS, Calrliss Baldwin, HBS, et al.*
- **World Open Innovation Conference (WOIC):** Founding Co-Chair (2014), *with Henry Chesbrough, UC Berkeley.* Member of the program (review) committee for each individual conference since 2014.
- **European Academy of Management (EURAM):** Founding Member; Chair & Head of the Conference Committee for the EURAM 2005; Track chair (2006-2008)
- **Mass Customization & Personalization Conference (MCPC),** Founding Co-Chair (2001), Co-Chair and Head of Program Committee (2001-2011, 2017), Honorary Program Chair (since 2013).
- **VHB TIE:** Annual Meeting of the German Association of Professors of Technology, Innovation, Entrepreneurship Conference Chair 2009, 2016, 2017

Member in Program & Review Committees of Further Conferences: **Academy of Management Meetings,** Reviewer, session chair, discussant, etc. (since 2001); **Americas Conference on Information Systems (AMCIS),** Reviewer; **ECAI (European Conference on Artificial Intelligence),** member of the program committee for the track on product configuration; **Hawaii International Conference on Systems Sciences (HICSS),** Reviewer; **IEEE International Conference on Management of Innovation and Technology,** member of the program committee; **Interdisciplinary Conference on Product Configuration Systems,** member of the program committee; International Conferences on Industrial Engineering and Engineering Management (IEEM) 2003, 2004, 2005, Member of the International Program Committee; **ISMC - International Workshops on Information Systems for Mass Customization,** member of the program committee; **PDMA-JPIM Research Forum Conference,** member of the program committee (since 2010); **R&D Management Conference,** member of the program committee (since 2007)

Referee / Evaluator for Grant Institutions: American Marketing Association (AMA), German Ministry for Education & Research (BMBF), German Ministry for Economics (BmWi), Deutsche Forschungsgemeinschaft (DFG); European Commission; Engineering and Physical Sciences Research Council (EPSRC); IEE Manufacturing Professional Network; British Engineering and Physical Sciences Research Council; ManuFuture; National Science Foundation (NSF); Peter-Pribilla-Foundation; Schweizer Nationalfond; Stiftung Industrieforschung; Studienstiftung des Deutschen Volkes; Tekes--the Finnish Funding Agency; Volkswagenstiftung

Referee / Evaluator for Tenure Evaluations, Promotions, or Faculty Recruitment (selection):

- Babson College, USA
- Cambridge University, UK
- Chalmers University, Sweden
- Concordia University, Canada

- Copenhagen Business School, Denmark
- Democritus University of Thrace, Greece
- Georgia Institute of Technology, USA
- Hong Kong University of Science and Technology, Hong Kong
- Loughborough University, UK
- Nanyang Technological University, Singapore
- Northeastern University, Boston, USA
- Radcliffe Institute, School of Design, Harvard University, USA
- Singapore University of Technology and Design, Singapore
- Stanford University, Scancor Program, USA
- Universität Darmstadt, Germany
- Universität Nürnberg, Germany
- Universität Siegen, Germany
- University of Kentucky, USA
- University of Nottingham, UK
- University of Warwick, UK

Faculty Services at RWTH Aachen

Leadership positions in the School of Business & Economics

- Serving as the **Associate Dean of Strategy & External Affairs**, RWTH School of Business & Economics, RWTH Aachen (2015-2021; elected 2015, re-elected 2018)
- **Founding Dean** of the **RWTH Business School** GmbH, a professional education unit for programs at the intersection between management and technology at RWTH Aachen University: Academic and program leadership (since 2016)
- **Academic Director** of the **Executive Master Program in Business Administration** (EMBA), offered by RWTH Aachen in cooperation with University of St. Gallen and Fraunhofer Academy (since 2012)
- **Co-Director**, Research Area **Technology, Innovation, Marketing & Entrepreneurship** (TIME) (since 2013)
- **Institute Head**, **RWTH Technology & Innovation Management Institute** (since 2007)

Board and leadership positions on the RWTH University level

- Co-Founder and Academic Co-Director of the **RWTH INC Invention Center**, a transfer initiative between RWTH and more than 50 corporate members at RWTH Campus, together with RWTH WZL and Fraunhofer IPT (since 2014)
- Member of the **IMP-Board for fostering interdisciplinary research** as part of the Excellence Initiative at RWTH Aachen (appointed by the president of the RWTH) (since 2008)
- Member of the **President's Innovation Board** of RWTH Aachen University, providing advice on RWTH's IP policy, technology transfer programs, licensing fee policies, and open innovation
- RWTH Representative of the **German Scholarship Foundation** (Vertrauensdozent Studienstiftung des Dt. Volkes)

Professional service for the School of Business & Economics

- **Member or Vice-Head of four Examination committee** ("*Prüfungsausschüsse*") for joint programs with other schools of RWTH Aachen (e.g., "Wirtschaftsingenieurwesen")
- Head / member of several faculty **recruitment committees**
- Head of the "Interdisciplinary Management Factory (IMF)" and Representative of the RWTH School of Business & Economics for the **German Research Excellence Initiative**, 2nd Funding period (2012-2018) (appointed by the president of the RWTH)
- Representative of RWTH Aachen and standing member of the faculty working group at the **AACSBm** the internationally most important accreditation for business schools and management education (*The Association to Advance Collegiate Schools of Business*) (since 2015)
- Elected Member of the **Faculty Board of the School of Business & Economics** ("Fakultätsrat")

(4) TOP PUBLICATIONS

Publication Impact and Downloads

- **Full List of Publications and Google Scholar Citation Impact:** <http://tinyurl.com/piller-pub>
- **ResearchGate Profile:** https://www.researchgate.net/profile/Frank_Piller
- **Handelsblatt Scholar Ranking:** *Participation declined due to ethical & professional concerns*

Top10 Journal Publications (self-selection)

1. *Patrick Pollok, Dirk Lüttgens & Frank Piller:* Attracting submissions in crowdsourcing contests: The role of search distance, identity disclosure, and seeker status. **Research Policy**. 48 (2019) 1 (February): 98-114. *Previously presented at WOIC 2016, Schumpeter Research Seminar 2017; AOM 2017.* (FT50; VHB JQ3: A; 0.7 HB; SSCI-2017 4.66).
2. *Alexandra Gatzweiler, Vera Blazevic, and Frank Piller:* Dark Side or Bright Light: Managing Deviant Content in Consumer Ideation. **Journal of Product Innovation Management**. 34 (2017) 6: 772–789, DOI: 10.1111/jpim.12369. (VHB JQ3: A; 0.5 HB; SSCI: 3.759, SSCI-5year: 4.358). *Winner of the 2013 PDMA Research award.*
3. *David Antons, Mathieu Declerck, Kathleen Diener, Iring Koch and Frank Piller:* Assessing the Not-Invented-Here Syndrome: Development and Validation of Implicit and Explicit Measurement Instrument. **Journal of Organizational Behavior**. 38 (2017) 8 (October): 1227–1245, DOI: 10.1002/job.2199 (VHB JQ3: A; 0.7 HB; SSCI-2016 3.607)
4. *Sebastian Kortmann & Frank Piller:* Open Business Models and Closed-Loop Value Chains: Redefining the Firm-Consumer Relationship. **California Management Review (CMR)**. 58 (2016) 3: 88-108. (VHB JQ3: B; 0.4 HB; SSCI-2013: 1.9, SSCI-5year: 2.67). *Recognized by CMR as "Top 10 most requested articles published in 2016".*
5. *David Antons and Frank Piller:* Opening the Black Box of "Not Invented Here": Attitudes, Decision Biases, and Behavioral Consequences. **Academy of Management Perspectives**. 29 (2015) 2: 193-217. (VHB JQ3: B; 0.5 HB; SSCI-2013: 2.82, SSCI-5year: 3.76)
6. *Sebastian Kortmann, Carsten Gelhard, Carsten Zimmermann and Frank Piller:* Linking Strategic Flexibility and Operational Efficiency: The Mediating Role of Ambidextrous Operational Capabilities. **Journal of Operations Management (JOM)**, 32 (2014) 5: 475–490 (FT50, VHB JQ2: "A"; 0.7 HB; SSCI-5year: 7.72).
7. *Christian Weller, Robin Kleer and Frank T Piller:* Economic Implications of 3D Printing: Market Structure Models in Light of Additive Manufacturing Revisited. **International Journal of Production Economics**. Vol. 164 (June 2015): 43–56. (VHB JQ3: B; 0.5 HB; SSCI-2013: 2.1, SSCI-5year: 2.59)
8. *Susumu Ogawa & Frank T. Piller:* Collective Customer Commitment: Reducing the risks of new product development, **MIT Sloan Management Review**, 47 (2006) 2 (Winter 2006): 65-72. (FT50, VHB JQ3: C; 0.5 HB; SSCI-5year: 1.98) *Featured in the New York Times Research Review on 18 Feb 2006 & Business Week on 7 July 2006; selected as one of the TOP 20 SMR papers recommended by faculty.*
9. *Frank T. Piller and Dominik Walcher:* Toolkits for idea competitions: A novel method to integrate users in new product development, **R&D Management**, 36 (2006) 3: 307-318. (VHB JQ2: "C"; 0.4 HB; SSCI-5year: 2.64)
10. *Nikolaus Franke and Frank Piller:* Value Creation by Toolkits for User Innovation and Design: The Case of the Watch Market, **Journal of Product Innovation Management**, 21 (2004) 6: 401-415. (VHB JQ2: "A"; 0.7 HB; SSCI: 2.77)

Top5 Other Publications (self-selection)

1. *Frank Piller and Joel West:* Firms, Users, and Innovation: An Interactive Model of Coupled Open Innovation. In: **New Frontiers in Open Innovation**, edited by Henry Chesbrough, Wim Vanhaverbeke & J. West, Oxford University Press, Oxford, 2014: 29-49.
2. *Kathleen Diener and Frank Piller:* **The Market for Open Innovation**. The 2013 Open Innovation Accelerator Survey. 2nd, totally revised edition, Raleigh, NC: Lulu Inc. 2013 [ISBN 978-1-4716-2985-3].
3. *Frank Piller, Kathrin Möslein, Christoph Ihl und Ralf Reichwald:* **Interaktive Wertschöpfung: Open Innovation, Individualisierung und neue Formen der Arbeitsteilung**, 3. Auflage: Wiesbaden: Gabler 2017 (first edition: 2006).
4. *Frank Piller:* Mass Customization, in: Charles Wankel (ed.): **The Handbook of 21st Century Management**, Thousand Oaks, CA: Sage Publications 2008: 420-430.
5. *Frank Piller:* **Mass Customization**, 4., überarbeitete und ergänzte Auflage, Wiesbaden: Gabler DUV 2006.