

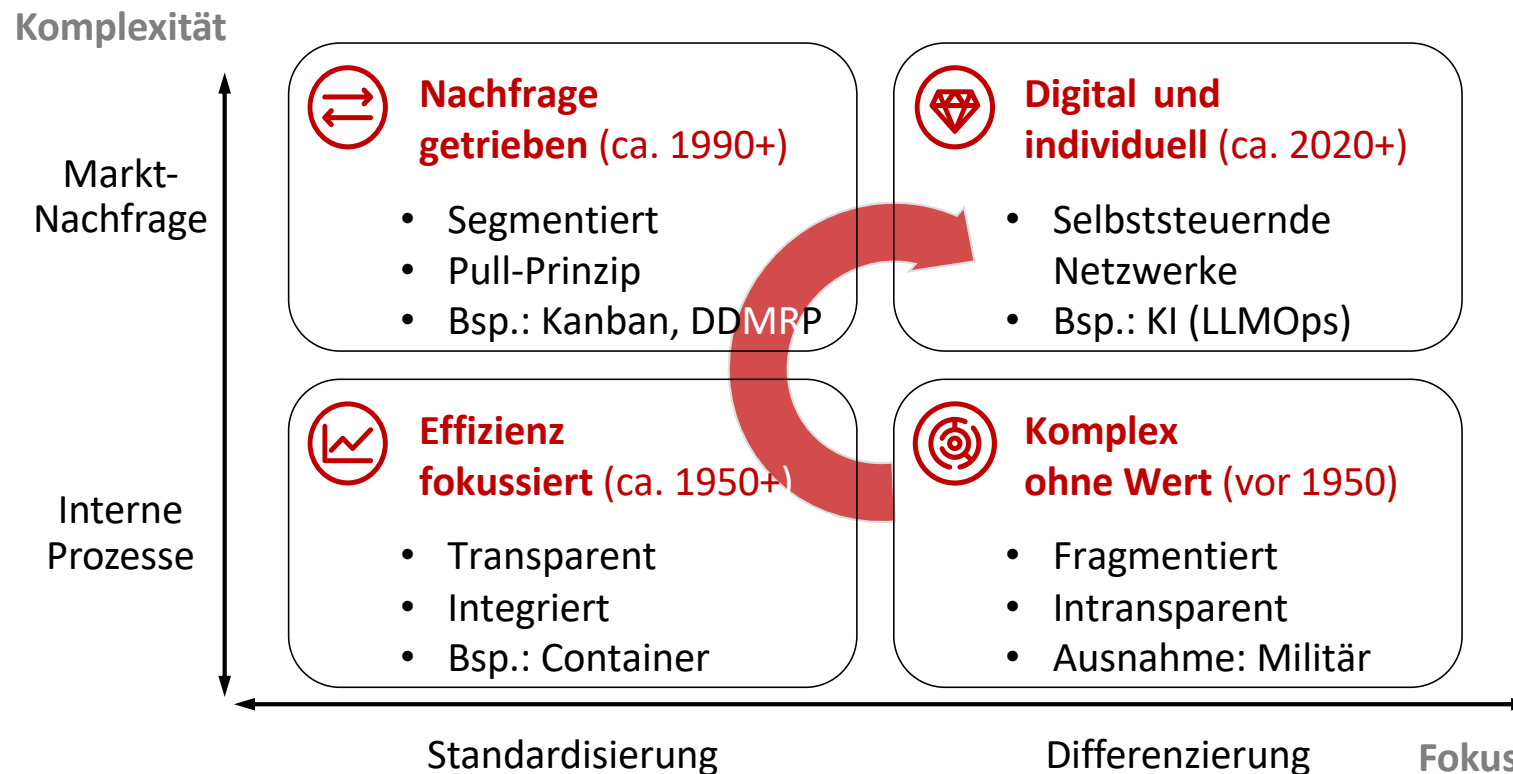
Herausforderungen für das Supply Chain Management in Life Sciences

Dr. Götz G. Wehberg

Vorlesung an der Hochschule Mainz / dem Hub für Biotechnologie

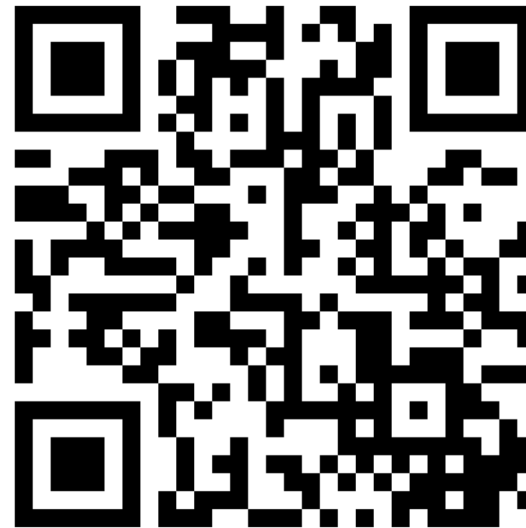
April 2024

Entwicklung von Supply Chains



Was bringt KI für das Supply Chain Management in Life Sciences?

Bitte teilen Sie Ihre Top-3
Herausforderungen auf
dem **Mentimeter.com**
(nutze QR oder Code: 3658 0362)



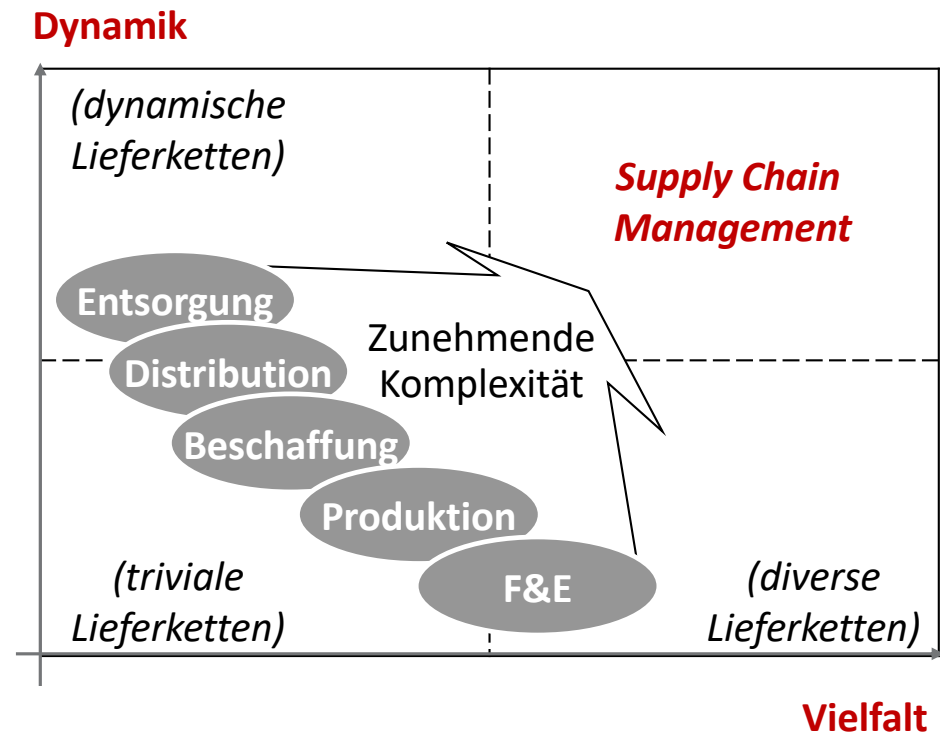
Zunehmende Komplexität ist herausfordernd

Wertschöpfungs-intern:

- Individualisierung (Losgröße N = 1)
- Auftragsänderungen (im „Freeze“)
- Kontinuierl. Netzwerkoptimierung
- Externe Partnerschaften (z.B. CMOs)
- Mobile Fertigung
- Smarte MedTech-Geräte
- ...

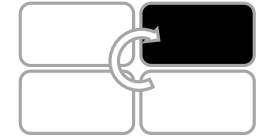
Durch externe Disruptionen:

- Infrastrukturausfälle (z.B. Suez)
- Pandemien (z.B. Covid)
- Terror-Attacken (z.B. Bab al-Mandab)
- ...





KI ermöglicht Selbst-Organisation



Künstliche Intelligenz

- Große Sprachmodelle
- „Prompts“ erfolgreicher PPS und S&OP-Fälle
- Kontinuierliche Verbesserung der Supply Chain
- Governance (GMP Compliance, etc.)

Selbst-Organisation

- Rekursion
- Ermächtigung
- Redundanz
- Selbst-Referenz

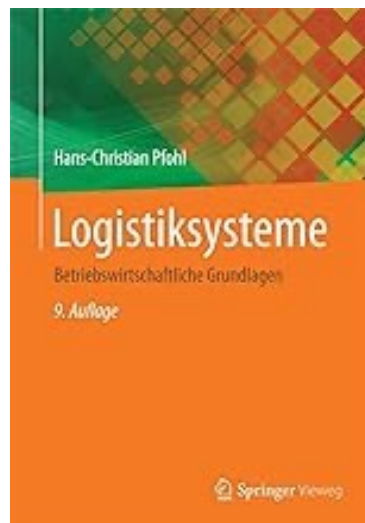


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Mögliche Forschungsprojekte

- Entwicklung einer **Supply Chain Management und LLM-basierten Operations- (LLMOps) Plattform** für Life Sciences
- Besonderheiten der **Supply Chain für die Gen- und Zelltherapie**
- **Zukünftige Berufsbilder im Health Care-Sektor** und erforderliche Ausbildungskapazitäten
- ...

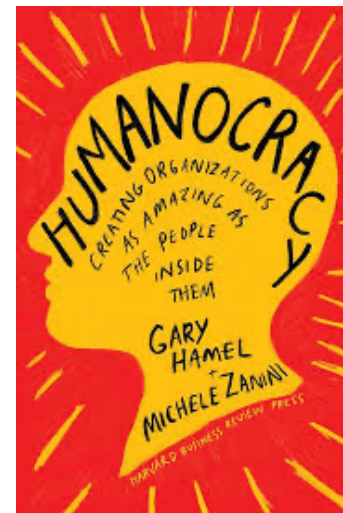
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How does biotechnology change business models in the Life Sciences Industry

Götz G. Wehberg, PhD

Lecture at Mainz University / Hub for Biotechnology

April 2024

DSI

Biotech is facilitating personalized medicine based on massive volumes of data

Biomedicine

- Diagnostics focused on **root causes** instead of phenomena
- **Individualized** prevention and treatment (i.e., no stereotypical treatment of “big drawers”-diseases)
- E.g. **mRNA** vaccines and **CRISPR**
- Based on genes, DNA and **genome**, thus **precise** (i.e., beyond the chemical elements of the periodic table)
- Lower cost support **affordability** for global population and health equity



Data volumes (of one human)

- A mature human being comprises of **30 trillion cells**
- **Cell types** are estimated to range 200 – 300 major categories
- **DNA** helps to guide development and function of all these cells
- There are **6 billion base pairs of DNA**
- **Data analytics and AI** is becoming a key facilitator for biomedicine
- **Future business models** in biomedicine are **patient- and data-centric**

New market entries of digital players are boosting, but still at the beginning



Big tech players



EMR & data aggregators



Niche analytics & biotech



- Life Sciences analytics market grows >20x by 2030
- Future business models in Biomedicine are characterized by collaborative ventures, service-based models and include prevention

Business models in biomedicine must consider principles of Human AI, that really benefits humans

Governing AI



- Independence
- Autonomy
- Auditing
- Competition

Running AI



- Sovereignty
- Exchangeability
- Balanced-Open-Source
- Continuous improvement

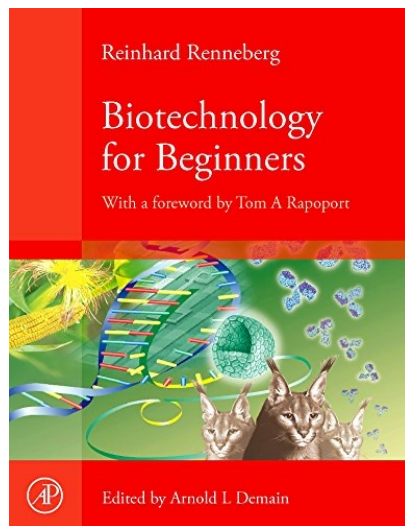


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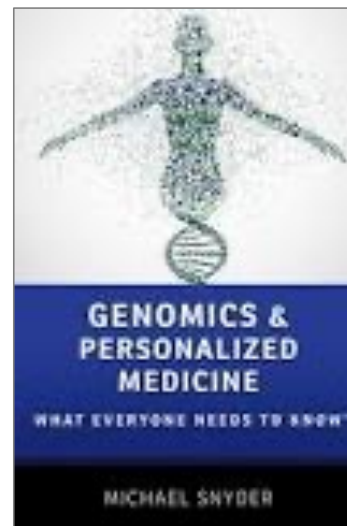
Possible research projects

- Development of **new business models** including a research **platform for the exploration of patient data**
- Definition of the **standards of sovereign AI for medicine** and requirements for audit-capable digital medicine
- Harmonization of **data models of global aggregators** of patient data
- Development of an **AI for quality assurance of evidence-based procedures** for healthcare
- ...

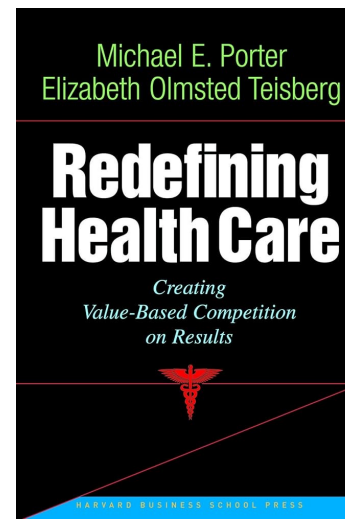
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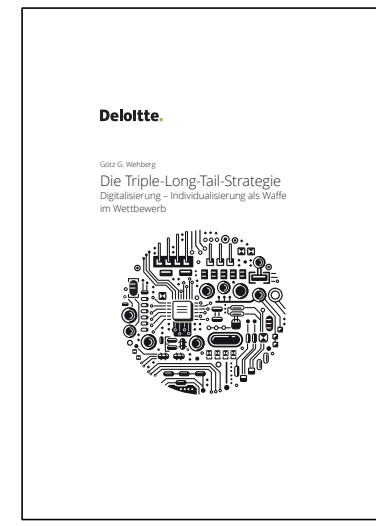
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