

# Book Review: Building Blocks of AI Management-Foundations and Insights from the German Publication Bausteine Eines Managements Künstlicher Intelligenz

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## Abstract

This review focuses on the publication “*Bausteine eines Managements Künstlicher Intelligenz*” by the Walter Brenner, Benjamin van Giffen, Jana Koehler, Tobias Fahse and André Sagodi. It is part of the Springer Essentials series, which is characterized by its compact presentation of current topics. It provides up-to-date knowledge in a concentrated form and offers a quick and understandable insight into a topic—whether as an introduction, an introduction to new subject areas or for a quick orientation within a specific context. This series is particularly aimed at readers who prefer digital and mobile formats and want to access concise knowledge quickly. The publication provides a comprehensive exploration of how organizations can effectively manage artificial intelligence (AI) to achieve competitive advantages. The authors argue that while AI holds immense potential for transforming business processes, products and services, its successful implementation requires a structured management approach that goes beyond traditional IT-Management.

## Keywords

Artificial Intelligence, Business Analytics, SMEs

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## 1. Introduction and Key Findings of the Publication

This publication “*Bausteine eines Managements Künstlicher Intelligenz*” emphasizes the importance of an interdisciplinary collaboration in the context of AI implementation across different industries. The authors argue that AI not only poses

operational innovations but also ethical dilemmas that require careful consideration.

The integration of AI systems into business models is not merely a technological shift, but it also demands a re-evaluation of existing workflows and processes, particularly in relation to how decisions are made and the biases that might be embedded within these technologies. Furthermore, the publication underscores the challenges posed by concept drift and out-of-range behavior, which highlights the limitations of AI systems when faced with data that deviates from training datasets. The urgency for feedback and active discussion among readers also points to a collective need for shared understanding as these technologies mature.

The findings of this publication indicate several key aspects that demand attention in the area of AI. Firstly, it stresses the financial implications of AI deployment, evidencing that a significant portion of expenses, with approximately 90%, is centered around operational costs rather than the initial development phase, which accounts for about 10% of overall expenditure. This observation highlights the complexity of this topic and that long-term investments are required for a successful AI implementation, underscoring the need that organizations must accurately forecast the return on investment when considering AI technologies. Moreover, the publication reveals a pressing concern regarding job displacements with a significant percentage of roles potentially at risk due to AI automation, highlighting the need for a strategic people management with technological advancements.

A central theme of the book is the need for organizations to expand their existing IT-Management frameworks to incorporate AI-specific considerations. The authors propose a management model based on three core criteria: feasibility (technical and legal viability), economic viability (cost-benefit analysis) and desirability (user acceptance and ethical alignment). They emphasize that AI projects often fail due to an overemphasis on technical feasibility while neglecting economic and human factors.

Additionally, the publication draws attention to the ethical complexities that arise in the context of AI's decision-making capabilities. The challenges by algorithms, navigating moral dilemmas as seen in autonomous vehicles, bring forth critical questions about AI's role and the risks associated with algorithmic bias. This potential for bias during AI development could lead to unjust outcomes, necessitating measures to mitigate such risks. This underscores the responsibility placed on developers to acknowledge bias as a major obstacle in achieving fair and just AI outcomes. The discussion surrounding concept drift, a phenomenon where the statistical properties of the target variable change over time, plays a vital role in understanding AI effectiveness in dynamic environments. This phenomenon, coupled with out-of-range behavior, highlights the uncertainty when AI systems encounter data they were not specifically trained with and by that calling for robust frameworks to adapt systems in real-time.

The publication also introduces a process model for AI-Management with a

process consisting of steps from ideation and prototyping to development, integration and operational deployment. Key processes include data procurement, infrastructure management, risk and compliance and fostering a culture of AI competency. The authors stress the importance of addressing bias, ensuring transparency and maintaining continuous learning to adapt AI systems to evolving business needs.

Finally, the publication emphasizes the necessity for transparent dialogue about the impact of AI technology to the society, particularly in sensitive sectors such as healthcare and education to minimize resistance from stakeholders who may be apprehensive about the implications of AI. The call for reader feedback within the publication reflects a broader consensus to enable a comprehensive dialogue that leverages diverse insights and experiences in shaping the future of AI applications and policies.

## **2. Practical and Scientific Relevance**

The publication provides both practical and theoretical value by addressing the multifaceted challenges and implications of AI integration across industries. At the core of the discussion highlights that AI is not just a technological innovation but requires a thorough re-evaluation of existing workflows and decision-making processes.

While the initial assertion emphasizes the necessity for a re-evaluation of workflows, decision-making and the inherent biases of AI systems, alternative viewpoints in the scientific domain challenge the perceived importance of these concerns and offer a more optimistic outlook regarding AI's integration into various sectors.

A key argument against a strictly cautionary view suggests that the economic implications of AI deployment may turn out to be less critical than initially assumed. For instance, the publication indicates that while many jobs are at risk due to AI and automation, this risk is often counterbalanced by the creation of new roles in sectors which are not directly related to AI development [1]. This emphasizes that job displacement is frequently accompanied by job creation, which indicates a dynamic evolution of the job landscape rather than a simple loss of employment. Additionally, the economic benefits attributed to AI technology are substantial. The Global Artificial Intelligence Study by PwC indicates that AI could contribute approximately \$15.7 trillion to the global economy by 2030, with implications for increased efficiency across various sectors [2] [3]. This anticipated contribution underscores AI's potential role as a catalyst for business growth rather than a mere disruptor. Businesses employing AI technologies are expected to enhance operational effectiveness and create new revenue streams through innovative services and products. Zhao and Jakkampudi also indicate that the fear which is surrounding the job displacement topic tends to be exaggerated, suggesting that AI technologies will primarily enhance productivity and create complementary roles rather than replacing existing jobs only [4]. Moreover, discussions

surrounding the biases embedded within AI systems, while valid, may overlook the potential for AI to mitigate human biases in decision-making processes. AI systems, when properly developed and managed, can provide analyses based on data-driven processes that may reduce the subjective biases of human decision-makers. This argument aligns with the findings of Usman *et al.* [5], who suggest that AI's application can streamline operations and lead to improved decision-making outcomes, provided ethical guidelines are followed closely in the development stages. Therefore, while the ethical complexities posed by algorithmic bias remain a pertinent issue, they should not overshadow the potential for AI to enhance fairness through consistent data-driven evaluations.

Furthermore, the concepts of concept drift and out-of-range behavior highlight limitations of AI systems in static environments, especially when faced with data that diverges from those on which the systems were trained. However, industry developments are increasingly focusing on adaptive models that learn continuously and adjust to new data inputs, thereby overcoming some of these challenges. Models proposed by Hossain *et al.* illustrate how continuously learning AI systems can enhance adaptability in various operational settings [6].

On the financial implications of AI deployments, it is noted that initial investments are often outweighed by operational costs, suggesting that organizations should focus more on long-term value rather than immediate costs. As explored by Zhao and Jakkampudi, in sectors such as hospitality and healthcare, AI can drive efficiencies that ultimately lead to cost savings over time [4]. The evolving business climate underscores the necessity for organizations to adapt and reframe their financial models to reflect the long-term benefits of AI rather than viewing its integration strictly through the lens of upfront costs.

As the discussion on job displacement and technological change progresses, it is evident that workforce planning must become more strategic, as highlighted by Saha [7]. The planning should also recognize the potential for these changes to create new paths for new skills and entrepreneurial growth. Initiatives aimed at workforce re-training and re-skilling have been established across various domains to address potential disruptions caused by AI's introduction into the workforce, as indicated by Saha [7]. Furthermore, AI-powered gig-platforms create new avenues for flexible employment, which enhances the work-life balance and expands non-traditional career opportunities [8].

Additionally, the ethical and moral dilemmas posed by AI decision-making, particularly within sensitive sectors such as healthcare and education, can be managed through robust ethical frameworks which promotes a responsible usage of AI. As noted by Osasona *et al.*, the risks of algorithmic decision-making are legitimate concerns, but establishing regulations and standards for ethical AI development can significantly mitigate these challenges [9]. Engaging stakeholders in discussions about the ethical implications of AI further fosters a cohesive understanding that allows for innovative reform without sacrificing ethical integrity. Feedback from various stakeholders can further enhance the dialogue surround-

ing AI technologies, which presents an opportunity for a collective input on the ethical and operational dimensions of AI systems. Such dialogues contribute to building an informed public viewpoint that can support the acceptance and understanding of AI applications across sectors [10].

### 3. Conclusion and Future Research Perspectives

The publication offers a well-rounded exploration of the challenges and opportunities associated with AI integration. It successfully underscores the necessity of interdisciplinary collaboration, the long-term investment and ethical evaluation in navigating AI's transformative potential across industries. A central takeaway is the three-pillar framework feasibility, economic viability and desirability, which serves as a strategic guide for organizations to balance technical capabilities with financial sustainability and human-centric design by providing a clear heuristic for evaluating AI projects which is a useful tool for both researchers and practitioners. The discussion on bias, concept drift, and out-of-range behavior underscores the limitations of AI systems, calling for adaptive, transparent and continuously learning models to ensure reliability in dynamic environments.

While it highlights critical concerns such as concept drift, algorithmic bias and job displacement, it also leaves room for more optimistic perspectives that recognize the AI capacity to enhance decision-making processes, foster new employment models and support continuous learning through adaptive systems. The academic debate enriches this view by suggesting that fears surrounding disruption may be mitigated through strategic workforce planning, ethical governance and inclusive stakeholder engagement. Even though concerns about job displacement and high operational costs persist, counterarguments suggest that AI's economic benefits, such as efficiency gains and new job creations, may outweigh initial disruptions.

In addition to my doctoral studies, I am engaged as a Freelancer in the SAP Data Analytics space. The book emphasizes that successful AI projects must balance technical feasibility, economic viability and user desirability. In a previous project, we piloted a predictive maintenance system using AI to reduce machine downtime. While the technical implementation was sound, we overlooked economic validation and employee acceptance. Maintenance technicians, skeptical of AI-driven alerts, often disregarded the system, limiting its impact. Applying the book's framework, we could have conducted pre-deployment workshops with technicians to address concerns and co-design the interface for usability. Additionally, a clear ROI analysis, factoring in reduced downtime and labor savings, would have secured a stronger executive buy-in. Moving forward, I'll integrate these three pillars into future AI initiatives as a Freelancer, ensuring alignment between technology, business value and human factors.

The book also outlines that AI models degrade when real-world data diverges from training conditions, a phenomenon termed "concept drift". Our demand-forecasting AI, trained on pre-pandemic data, struggled to adapt to post-2020 sup-

ply chain disruptions, leading to costly overstock forecasts. The book advocates for continuous monitoring and scheduled retraining to maintain accuracy. To operationalize this, we could implement a drift-detection dashboard that flags declining model performance and triggers automatic retraining when anomalies exceed thresholds. This proactive approach, inspired by the book's emphasis on adaptability, would help having forecast data remaining reliable amid market volatility.

In conclusion, the publication provides a valuable foundation for both practitioners and researchers to assess AI's implications with a balanced, forward-looking perspective and calls for ongoing dialog among all stakeholders to shape the responsibility of the future of AI.

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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