


Generative KI im Hauptkundenbestellprozess:  
Eine SWOT-Analyse

## Bachelorarbeit

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# 1 Introduction

## 1.1 Motivation

"Just as electricity transformed almost everything 100 years ago, today I actually have a hard time thinking of an industry that I don't think AI will transform in the next several years" said Andrew Ng, founder & CEO of Landing AI, founder of deeplearning.ai and adjunct professor at Stanford University (Lynch, 2017). In today's rapidly changing global economy, efficiency and competitiveness are more critical than ever. As businesses adapt, the integration of advanced technologies like generative artificial intelligence is not just a possibility but a game changer for supply chain management. The revolutionary power of generative AI can transform key processes, such as demand forecasting, inventory management, and logistics, leading to better sustainability, resilience, and decision-making. However, this transformation is not without its challenges and uncertainties (Toorajipour et al., 2021).

Supply chain management has become more important since the 1990s due to increasing national and international competition. Consumers have many options to meet their needs, therefore businesses must strategically place products along the distribution chain to make them accessible at the lowest cost (Lummus et al., 1998). In the past, companies solved distribution problems by keeping inventory at multiple locations, but unpredictable market conditions and changing consumer buying patterns made this business strategy risky and often unprofitable. Even today, there is much potential to improve supply chain operations. Technological advances, consumer expectations for faster deliveries, Bullwhip effect, and the need for sustainability are constantly pushing companies to innovate and optimize their supply chain (Toorajipour et al., 2021).

There are a lot of uncertainties surrounding the integration of generative AI that pose a risk that organizations might miss potential opportunities or overlook significant risks, leading to inefficient use of resources and loss of competitiveness. Therefore, the necessity of developing a well-thought-out strategy for integrating generative AI into the main customer order process of the supply chain cannot be overstated. This strategy must be based on a systematic assessment of the impact of generative AI, balancing the potential benefits with the associated risks (Familoni/Onyebuchi, 2024).

A recent case study by Wamba et al. (2023a) illustrates the diverse potential benefits of generative AI in the supply chain, including cost savings, real-time analytics, increased automation, improved sustainability, enhanced decision-making, and greater efficiency and productivity. However, to leverage these benefits effectively, it

is crucial to identify suitable implementation areas within the supply chain. This foresight can help avoid technical, ethical, and organizational challenges.

Additionally, current research on generative AI in supply chain management often focuses on the advantages or disadvantages. However, there is a noticeable research gap in studies that actively address how to maximize business value through the strategic implementation of generative AI. Most literature does not provide a comprehensive analysis to help companies develop effective strategies for AI integration. This thesis aims to fill this gap by offering a clear comparison and analysis of the strengths, weaknesses, opportunities, and threats (SWOT) associated with generative AI, providing a solid framework for strategic decision-making.

Furthermore, this thesis addresses the research question: "*Where along the main customer order process of the supply chain does generative AI offer the best risk-to-reward ratio to maximize business value?*"

The objective of this bachelor's thesis is to enable companies to facilitate the first step toward the integration of generative artificial intelligence in their strategy development. Methodologically, the research is based on a comprehensive literature review and expert interviews to gather insights and empirical data. SWOT analyses are used to examine in which areas of the supply chain the use of generative AI is beneficial and advantageous, but potential risks are also identified. In concrete terms, this thesis has the goal of identifying the specific strengths and weaknesses of generative artificial intelligence along the main customer order process. The main customer order process includes planning, sourcing, material handling, distribution, and reverse logistics (Nitsche et al.,2021). In addition, the opportunities arising from the use of generative AI are analyzed, and the associated risks and challenges are evaluated.

Based on this SWOT analysis, recommendations for action are created about finding a strategy for using generative AI along the main customer order process. This should clearly show where the most benefits can be expected in the supply chain using generative AI and where the most significant challenges could appear. This approach helps companies find an optimal and efficient strategy for the use of generative AI along the main customer order process of the supply chain to maximize their benefits while minimizing the risks.

## 1.2 Research Procedure

The theoretical foundation of this research explores key concepts of supply chain management and generative artificial intelligence. This section provides the necessary background and context for understanding the integration of generative AI in supply chains. The following methodology includes a detailed explanation of the research steps taken in order to answer our research question. The research process section details the findings of the prior research methodology. We explore the status quo on generative AI research within supply chain and collect data from the expert interviews, providing practical insights into the thoughts about application of generative AI.

Finally, these findings will contribute to the existing body of knowledge by discussing the research question and reflecting on its implications for both research and practice. Additionally, recommendations for future research are offered and faced limitations will be discussed.

This structured approach ensures a comprehensive understanding and thorough analysis of the integration of generative AI into supply chain management.

## 7 Conclusion

This study set out to explore the integration of generative AI within supply chain management, focusing on identifying areas where generative AI offers the best risk-to-reward ratio along the main customer order process. This research aimed to assess the strengths and weaknesses of generative AI in supply chain operations, identify the opportunities and threats it presents, provide strategic recommendations for its implementation, in order to fill the existing research gap on this topic. The comprehensive analysis through literature review and expert interviews reveals several key insights and implications for both research and practice.

The literature review revealed strong synergy effects between various SWOT factors. The expert interviews provided in-depth knowledge about the practical implications of generative AI, highlighting its variable impact based on the complexity of activities and existing automation levels within different supply chain areas. The coding process analyzed transcripts to identify key themes and SWOT factors, which were then synthesized with the literature review findings.

Generative AI offers the best risk-to-reward ratio in the supply chain's planning and material handling areas by enhancing efficiency, accuracy, and sustainability through automation and improved risk analysis. In planning, AI aids in demand forecasting, scenario planning, and decision-making, leading to optimal resource allocation and operational efficiency. In material handling, AI improves production scheduling, streamlines operations, and reduces waste, contributing to sustainability goals.

The practical implications of this research highlight the necessity for companies to develop strategic plans and allocate investments wisely to maximize the benefits of generative AI. Companies should prioritize generative AI integration in planning and material handling to achieve the greatest enhancements in efficiency and sustainability. However, the distribution application should be approached with careful consideration of specific company needs and resources. In contrast, the roles of generative AI in sourcing and reverse logistics remain supplementary, assisting with administrative efficiency rather than replacing complex human tasks.

In conclusion, the strategic integration of generative AI into supply chain management holds promise for significantly enhancing efficiency, resilience, and sustainability. By leveraging AI in areas where it can provide the most substantial benefits and carefully addressing the unique challenges of each supply chain segment, companies can maximize the business value derived from these technologies. By identifying the areas planning and material handling as the areas with the best risk to reward ratio, this thesis

provides a foundational framework for future research and practical applications, paving the way for more efficient, resilient, and adaptable supply chain operations, and instilling a sense of optimism about the future of AI in the main customer order process.