

The Impact of Generative Artificial Intelligence on Knowledge Exchange in Supply Chains

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Abstract: This study aims to understand and evaluate the impact of generative artificial intelligence (GenAI) on knowledge exchange processes in supply chains. In the era of digital transformation, tools such as ChatGPT, DALL-E, and other generative models enable the automation of knowledge creation and sharing, significantly transforming collaboration between organizations. The analysis focuses on key aspects such as supporting decision-making processes, optimizing real-time communication, and enhancing knowledge management in distributed structures. The research explores the benefits GenAI can bring to supply chains, including faster information sharing, more accurate forecasting, and automation of operational documentation. At the same time, it identifies potential challenges, such as data security risks, unpredictability of generated outcomes, and ethical considerations regarding the use of artificial intelligence in strategic knowledge management processes. The study includes a literature review and empirical research conducted among companies in sectors such as logistics, manufacturing, and retail. The results indicate that generative artificial intelligence not only supports knowledge exchange but also facilitates more dynamic and integrated models of collaboration. However, the research emphasizes the need to develop guidelines for implementing this technology that address organizational, technological, and regulatory aspects. In conclusion, the findings suggest that the responsible and strategic implementation of GenAI can significantly enhance efficiency and innovation in supply chains while highlighting the importance of investing in employee education and the development of knowledge management policies.

Keywords: Generative artificial intelligence (GenAI), Knowledge exchange supply chain management, Automation of knowledge sharing, Real-Time Communication

1. Introduction

The rapid advancement of artificial intelligence (AI), and particularly the emergence of generative AI (GenAI) models such as ChatGPT and DALL-E, has introduced profound changes to knowledge management practices across industries. In supply chain management (SCM), where the speed and accuracy of information flow are critical, GenAI presents new opportunities to enhance collaboration, automate knowledge sharing, and support decision-making processes. Unlike traditional AI, which often focuses on predictive analytics or automation of specific tasks, generative AI possesses the capability to create new content, synthesize large datasets, and facilitate real-time communication, offering transformative potential for supply chains (Guojian 2023; Żywiołek et al. 2024).

Despite the increasing interest in the application of AI in SCM, existing research has predominantly focused on areas such as automation, forecasting, and operational optimization (Yong-Suo 2004). Limited studies have explored how GenAI specifically impacts knowledge exchange mechanisms within supply chains, particularly in terms of enabling real-time collaboration, improving decision-making quality, and addressing knowledge silos across organizations (Żywiołek et al. 2025). Furthermore, concerns surrounding data security, ethical use of AI-generated content, and regulatory compliance add complexity to the adoption of these technologies (Khan et al. 2023).

This study addresses these gaps by investigating the influence of generative AI on knowledge exchange processes in supply chains, focusing on three key sectors: logistics, manufacturing, and retail. Using a large-scale survey conducted in Poland, the Czech Republic, and Slovakia, the research examines how organizations adopt and utilize GenAI tools to support knowledge management functions. It evaluates both the benefits and challenges associated with GenAI implementation, including improvements in communication efficiency, enhancements in predictive capabilities, and potential risks related to data privacy and content reliability (Hongfei 2020).

The primary contributions of this study are threefold. First, it provides empirical evidence on the role of GenAI in shaping knowledge exchange practices in contemporary supply chains. Second, it identifies critical factors that influence successful adoption, such as organizational readiness, tool accessibility, and technological familiarity. Third, it offers practical recommendations for organizations seeking to strategically integrate GenAI into their knowledge management processes, emphasizing the importance of ethical governance, employee training, and infrastructure readiness.

The structure of the paper is as follows: Section 2 presents a review of relevant literature on generative AI and knowledge management in supply chains. Section 3 outlines the research methodology, including sample characteristics and data analysis techniques. Section 4 presents and analyzes the empirical results. Section 5 discusses the findings in the context of existing research, and Section 6 concludes the paper with implications for practice and directions for future research.

2. Review of Literature

This section presents the conceptual foundations of generative artificial intelligence (GenAI) and its application in supply chain knowledge management. It outlines the evolution of GenAI technologies, their unique capabilities compared to traditional AI systems, and the relevance of these technologies for inter-organizational knowledge exchange.

2.1 Generative Artificial Intelligence: Characteristics and Capabilities

Generative AI refers to machine learning models capable of creating original content, including text, images, and code, based on learned patterns from large datasets. Technologies such as OpenAI's ChatGPT, DALL·E, and Google's Bard exemplify the application of GenAI across various domains. Unlike traditional AI models that focus on classification or regression tasks, GenAI models generate new data outputs, making them particularly valuable for tasks involving documentation, report synthesis, or real-time decision support.

In the context of organizational settings, GenAI supports a range of functions, from automated knowledge generation to intelligent assistance in decision-making (Kostavelis et al. 2025; Żywiołek 2024). In particular, these models can improve the accessibility and contextualization of knowledge within distributed teams, aligning well with the decentralized nature of supply chains.

2.2 Knowledge Management and Exchange in Supply Chains

Knowledge management (KM) in supply chains refers to the systematic handling of information and expertise among stakeholders to ensure timely and accurate decision-making. Efficient KM enables firms to react to disruptions, optimize resource allocation, and enhance coordination with partners (Hu and Zhao 2024; Shang et al. 2024). However, KM in supply chains is often challenged by fragmented information systems, cultural differences, and poor interoperability between partners. Generative AI can bridge these gaps by providing common communication interfaces, translating documentation, and summarizing knowledge assets dynamically across systems and languages (Żywiołek 2024; Sterbak et al. 2022).

2.3 Research Gaps and Emerging Trends

While AI has been widely adopted in areas such as demand forecasting, route optimization, and robotic process automation (Tao 2020; Shang et al. 2024), the application of GenAI specifically to KM in supply chains remains underexplored. Most studies focus on predictive or prescriptive AI, overlooking the knowledge-creation and communication capabilities that are essential for dynamic and agile supply chains (Zhou et al. 2024).

Additionally, few empirical studies assess how GenAI influences organizational behavior, inter-organizational trust, and the development of innovation capabilities. This study contributes to filling this gap by exploring how companies in logistics, manufacturing, and retail are currently using GenAI tools and what factors affect their adoption (Sterbak et al. 2021).

2.4 Ethical and Regulatory Considerations

The use of GenAI in knowledge processes also raises critical issues related to data governance, transparency, and bias. Organizations must consider regulatory frameworks such as the EU AI Act and develop internal policies to mitigate risks linked to misinformation, misuse of generated content, and employee resistance (Ooi et al. 2024; Perera et al. 2021). In conclusion, the literature suggests that GenAI offers transformative capabilities for knowledge management in supply chains. Yet, there is a clear need for more empirical research that connects these technological advancements with practical outcomes (Yordanova 2025), organizational culture, and regulatory alignment. This study aims to address these needs through a comprehensive survey-based analysis in Central Europe (Pandey et al. 2023).

3. Materials and Methods

This study employed a quantitative research design using the Computer-Assisted Web Interviewing (CAWI) technique. The empirical investigation was conducted among organizations operating in the logistics,

manufacturing, and retail sectors in three Central European countries: Poland, the Czech Republic, and Slovakia. A total of 13,271 respondents participated in the study, representing a broad and diverse sample in terms of industry, organizational structure, and level of technological maturity. This allowed for an in-depth examination of how generative artificial intelligence (GenAI) is adopted and utilized across different segments of the supply chain. The research instrument consisted of a structured questionnaire comprising 24 items organized into thematic blocks. The key areas addressed in the survey included the degree of familiarity and usage of GenAI tools (such as ChatGPT and DALL-E), the role of these tools in enhancing communication and supporting decision-making processes, challenges and barriers to GenAI adoption, and organizational attitudes toward AI-enabled knowledge management. Respondents evaluated statements on a 7-point Likert scale, where 1 indicated strong disagreement and 7 indicated strong agreement. The demographic profile of the sample revealed that 72% of respondents were male and 28% female, with the majority falling in the 30–49 age range. Regarding education, 53% had completed secondary education and 47% held higher education degrees. In terms of professional roles, 42% of respondents identified as managers, followed by 29% as business owners, 18% as specialists, and 11% as IT department personnel. Concerning their experience with AI technologies, 47% reported having prior knowledge, 36% declared general familiarity, and 17% indicated practical experience in using such tools. To analyze the collected data, Structural Equation Modeling with Partial Least Squares (SEM-PLS) was employed. This method was chosen due to its suitability for testing complex models involving latent variables and assessing relationships between constructs such as perceived usefulness, organizational readiness, and technological accessibility. The data were processed using the SmartPLS3 software, enabling rigorous model estimation and path analysis.

The research process was carried out in four structured stages: (1) identifying the research gap through an in-depth literature review; (2) designing and piloting the survey instrument; (3) collecting data via the CAWI method in the selected countries; and (4) analyzing the results using SEM-PLS techniques. This methodological approach ensured high reliability and validity of the results, providing a solid foundation for evaluating the role of GenAI in enhancing knowledge exchange within supply chains. The following figure illustrates the detailed steps undertaken during the empirical research process on the impact of generative artificial intelligence (GenAI) on knowledge exchange in supply chains (fig 1.).

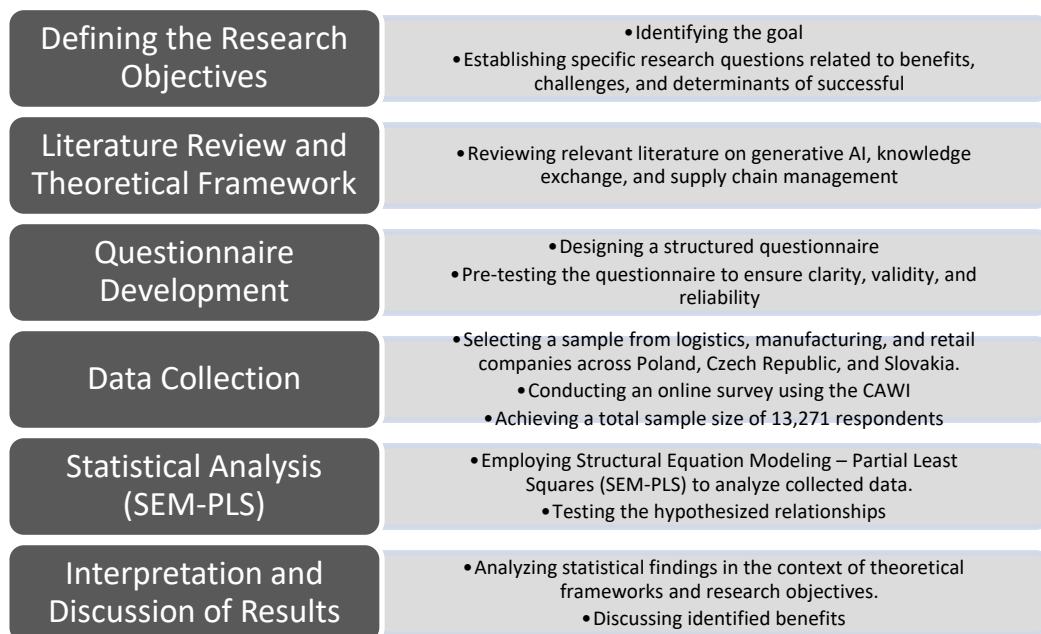


Figure 1: Research Steps

The identification of research gaps was a critical initial step, enabling clear direction and structuring of subsequent research activities. A thorough literature review revealed that, despite growing interest in artificial intelligence, few studies have systematically explored the impact of generative artificial intelligence (GenAI) specifically on knowledge exchange processes within supply chains. This gap relates primarily to understanding how GenAI influences collaboration, real-time communication, and decision-making support among organizations in various sectors, including logistics, manufacturing, and retail.

Table 1: Description of the research group

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1	Sex	Man 72%		Woman 28%	
2	Age	18-29 years	19%	18-29 years	6%
		30-39 years	31%	30-39 years	45%
		40-49 years	42%	40-49 years	36%
		Over 50 years	8%	Over 50 years	13%
3	Education	high school 53%		higher education 47%	
4	Professional Position or Role	Owner	managerial level	specialists	IT department personnel
		29%	42%	18%	11%
5	Experience with AI Technologies	prior knowledge	familiarity	practical experience	
		47%	36%	17%	

The analysis of the research group indicates significant demographic diversity, with male respondents (72%) strongly prevailing over female respondents (28%). The majority of respondents fall into the age categories of 40-49 years (42% men, 36% women) and 30-39 years (31% men, 45% women), indicating that the surveyed professionals predominantly represent active, mid-career individuals. Educationally, the sample is balanced, with slightly more participants having completed high school (53%) compared to higher education graduates (47%). Regarding professional roles, managerial-level respondents constitute the largest group (42%), followed by business owners (29%), specialists (18%), and IT department personnel (11%), highlighting that decision-makers dominate the sample. The respondents' experience with AI technologies is relatively high; almost half report prior knowledge (47%), while fewer indicate familiarity (36%) and practical experience (17%), suggesting that theoretical understanding of AI outweighs direct implementation experience among participants.

After conducting the survey, the collected data were systematically analyzed, and relevant conclusions were formulated. The questionnaire was divided into multiple thematic sections, where participants were asked to evaluate statements using a 7-point Likert scale, with 1 representing complete disagreement and 7 indicating complete agreement. The initial section of the questionnaire assessed respondents' familiarity and understanding of generative artificial intelligence (GenAI) technologies and their application in supply chain management. The subsequent section identified the roles within organizations responsible for decision-making regarding knowledge management and the integration of AI-driven solutions. Another part of the survey concentrated specifically on investments related to the implementation of generative AI tools (e.g., ChatGPT, DALL-E) aimed at enhancing knowledge exchange processes. This included exploring the utilization of advanced IT solutions, software applications, and digital platforms supporting real-time communication and documentation automation. The questionnaire further examined aspects of accessibility, cooperation between supply chain partners facilitated by AI solutions, and the practical adoption of GenAI tools within organizational structures. Respondents' preferences, attitudes, and intended future behaviors toward adopting GenAI were evaluated, enabling the classification of their readiness and openness into three distinct groups: low, medium, and high acceptance of AI-supported knowledge exchange. Such classification allowed for a clear identification of barriers, opportunities, and potential directions for further technology implementation tailored to each group's awareness level. The research sample comprised professionals aged predominantly between 26 and 50 years, with 54% male respondents and 46% female respondents, considered representative of the target professional population involved in supply chain management. Considering statistical rigor, the analysis applied a significance level of 0.01 and a maximum estimation error of $d = 1\%$ ($u = 3.1426$). The study was intentionally conducted in selected European Union member countries known for their strategic approach and progressive implementation of digital and AI-based solutions in supply chain operations, reflecting comparable planning practices and technological maturity. The author utilized Microsoft Excel, Statistica, and SmartPLS3 software to perform statistical analyses. SmartPLS3 was specifically chosen for its capability to manage complex data relationships through Structural Equation Modeling (SEM-PLS). This allowed for robust verification of the research model and hypotheses, providing precise insights into the effects of generative artificial intelligence on knowledge exchange and management effectiveness within supply chains.

4. Empirical Results

This section presents the empirical findings related to the impact of generative artificial intelligence (GenAI) on knowledge exchange processes within supply chains. The survey assessed six key constructs: awareness of GenAI technologies, availability of GenAI tools, organizational responsibility for knowledge management, improvement in real-time communication, forecasting efficiency, and effectiveness of knowledge sharing. Table 2 summarizes the mean values and Cronbach's Alpha coefficients for each construct, ensuring the reliability of the measurements. The results indicate that Forecasting Efficiency received the highest mean score ($M = 5.12$; $\alpha = 0.93$), suggesting that respondents perceive GenAI as particularly valuable in enhancing forecasting and planning activities within supply chains. Real-Time Communication Improvement also scored highly ($M = 4.68$; $\alpha = 0.84$), demonstrating that GenAI significantly contributes to streamlining communication processes between supply chain partners. Awareness of GenAI technologies was rated moderately high ($M = 4.45$; $\alpha = 0.87$), indicating that knowledge and familiarity with generative AI tools such as ChatGPT and DALL-E are increasingly widespread across organizations. Similarly, Knowledge-Sharing Effectiveness achieved a positive evaluation ($M = 4.07$; $\alpha = 0.83$), highlighting GenAI's role in facilitating better collaboration and learning within supply chain networks. On the other hand, Availability of GenAI Tools ($M = 3.15$; $\alpha = 0.91$) and Responsibility for Knowledge Management ($M = 3.28$; $\alpha = 0.85$) recorded lower mean values. These findings suggest that despite rising awareness, many organizations still face barriers related to limited access to GenAI solutions and a lack of clearly assigned roles or strategies for managing AI-generated knowledge. Overall, the empirical data emphasize the need for organizations not only to build awareness of GenAI technologies but also to invest in accessible infrastructures and formalize knowledge management structures to fully leverage the benefits of GenAI in supply chain operations.

Table 2: Mean values and Cronbach's α coefficient

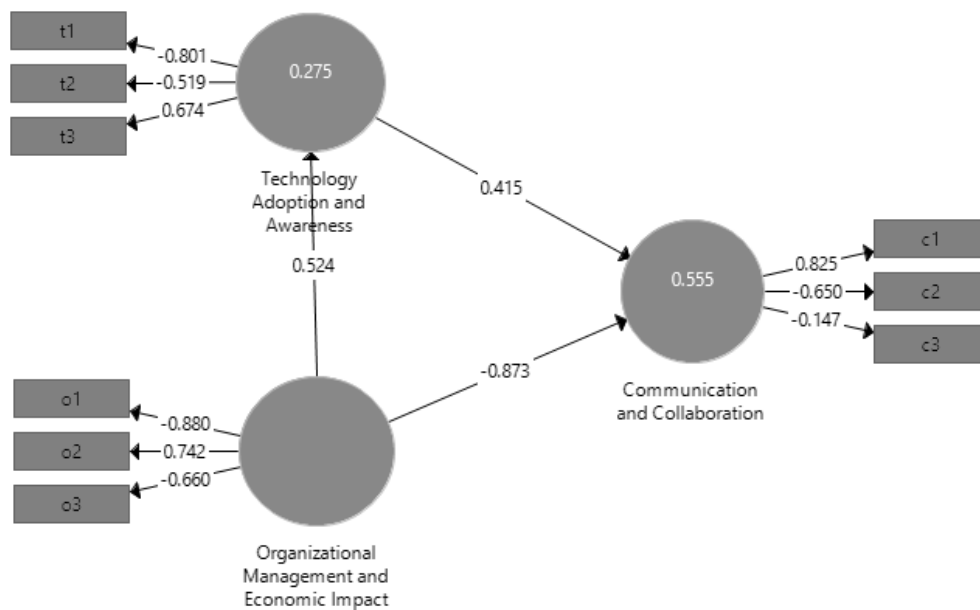
Variable	Mean	Cronbach's Alpha
Awareness of GenAI	4,45	0,87
Availability of GenAI Tools	3,15	0,91
Responsibility for Knowledge Management	3,28	0,85
Real-Time Communication Improvement	4,68	0,84
Forecasting Efficiency	5,12	0,93
Knowledge-Sharing Effectiveness	4,07	0,83

Based on the collected data related to the application of generative artificial intelligence (GenAI) for enhancing knowledge exchange in supply chains, Table 3 provides a detailed summary of the factors investigated, including their respective average values and reliability coefficients (Cronbach's alpha). The presented factors encompass key dimensions such as awareness and understanding of GenAI technologies, organizational responsibility for knowledge management, economic benefits from implementing AI-based solutions, availability and accessibility of GenAI tools, adoption of decision-support applications, improvements in real-time communication, forecasting accuracy, supply chain collaboration, and overall knowledge-sharing efficiency. Respondents rated each factor, enabling subsequent analysis of inter-factor correlations. Additionally, the standardized Cronbach's alpha was calculated for each category to verify the internal consistency and reliability of the measurement scales utilized, ensuring the robustness of the findings and conclusions drawn from the analysis.

Table 3: Relationships between factors

	Awareness	Availability	Responsibility	Communication	Forecasting	Knowledge Sharing
Awareness	1	0,62	0,59	0,48	0,5	0,46
Availability	0,62	1	0,56	0,52	0,49	0,45
Responsibility	0,59	0,56	1	0,41	0,43	0,39
Communication	0,48	0,52	0,41	1	0,58	0,51
Forecasting	0,5	0,49	0,43	0,58	1	0,57
Knowledge Sharing	0,46	0,45	0,39	0,51	0,57	1

The analysis of the survey results provides empirical insights into the application of generative artificial intelligence (GenAI) in supporting knowledge exchange within supply chains. Key variables measured in the study include awareness of GenAI, availability of GenAI tools, organizational responsibility for knowledge management, real-time communication improvement, forecasting efficiency, and overall effectiveness of knowledge sharing. Each variable was evaluated using a 7-point Likert scale, and internal consistency was assessed using Cronbach's Alpha. Among the six measured dimensions, the highest average score was recorded for Forecasting Efficiency ($M = 5.12$; $\alpha = 0.93$), indicating that respondents perceive GenAI as a highly valuable tool for improving predictive capabilities in supply chain planning. Similarly, Real-Time Communication Improvement ($M = 4.68$; $\alpha = 0.84$) and Awareness of GenAI ($M = 4.45$; $\alpha = 0.87$) received relatively high scores, reflecting a growing recognition of GenAI's role in enhancing organizational communication and awareness. Conversely, the lowest average scores were observed for Availability of GenAI Tools ($M = 3.15$; $\alpha = 0.91$) and Responsibility for Knowledge Management ($M = 3.28$; $\alpha = 0.85$). These results suggest that despite increasing awareness, many organizations still lack sufficient access to GenAI tools or clearly defined structures responsible for AI-integrated knowledge management. Correlation analysis revealed strong and meaningful relationships among several variables. Notably, Forecasting Efficiency was strongly correlated with Knowledge-Sharing Effectiveness ($r = 0.57$) and Communication Improvement ($r = 0.58$), demonstrating that organizations that leverage GenAI for predictive purposes also benefit from improved collaboration and knowledge flow. Furthermore, Availability of GenAI Tools showed significant correlations with both Communication ($r = 0.52$) and Awareness ($r = 0.62$), highlighting that accessibility to AI solutions is a key enabler of effective implementation. Overall, the results underscore the importance of not only technological capability but also organizational readiness and structural support in the successful integration of GenAI into supply chain knowledge management. These findings support the hypothesis that generative AI can substantially improve collaboration, communication, and decision-making in complex, distributed supply networks.



Technology Adoption and Awareness		Organizational Management and Economic Impact		Communication and Collaboration	
T1	Awareness and Understanding of GenAI Technologies	O1	Organizational Responsibility for Knowledge Management	C1	Real-Time Communication Improvement through GenAI
T2	Availability and Accessibility of GenAI Tools	O2	Implementation of GenAI Solutions with Economic Benefits	C2	Enhanced Collaboration and Integration in Supply Chains

Technology Adoption and Awareness		Organizational Management and Economic Impact		Communication and Collaboration	
T3	Adoption of AI-based Decision Support Applications	O3	Accuracy and Efficiency of Forecasting and Planning	C3	Knowledge-Sharing Efficiency and Learning within Organizations

Figure 3: SEM structural equations for GenAI

To better understand the relationships between the examined constructs, a structural equation modeling (SEM) analysis was conducted using the Partial Least Squares (PLS-SEM) method. The model tested the influence of two latent variables—Technology Adoption and Awareness and Organizational Management and Economic Impact—on the outcome construct Communication and Collaboration, which is critical for effective knowledge exchange in supply chains. The figure below illustrates the tested structural model along with factor loadings, path coefficients, and explained variance (R^2). Technology Adoption and Awareness has a positive and significant effect on Communication and Collaboration ($\beta = 0.415$), with an R^2 value of 0.555, indicating that this construct explains over 55% of the variance in communication and collaboration effectiveness. This highlights the importance of technology familiarity and readiness in facilitating GenAI-supported knowledge exchange. Organizational Management and Economic Impact shows a strong negative relationship with Communication and Collaboration ($\beta = -0.873$), which may reflect that organizational inefficiencies or economically driven AI initiatives without strategic alignment can undermine effective collaboration. This finding requires further qualitative investigation, but may point to overly cost-focused implementations lacking employee or knowledge integration. In addition, Organizational Management and Economic Impact significantly predicts Technology Adoption and Awareness ($\beta = 0.524$), suggesting that managerial structures and perceived economic outcomes directly influence how organizations approach and adopt GenAI tools. The R^2 values are 0.275 for Technology Adoption and 0.555 for Communication and Collaboration, suggesting that the model has moderate to strong explanatory power.

The findings from the structural equation model reveal that economic incentives alone are insufficient to ensure the successful implementation of generative artificial intelligence (GenAI) in supply chain knowledge management. While the organizational management and economic impact construct positively influences technology adoption, it simultaneously exerts a strong negative effect on communication and collaboration outcomes. This indicates that organizations focusing solely on cost efficiency or short-term performance metrics may unintentionally hinder the broader collaborative benefits that GenAI can deliver.

In contrast, the adoption and awareness of GenAI technologies have a clear and positive influence on communication and collaboration across supply chain networks. This highlights the importance of technological readiness, digital competence, and internal knowledge culture as enablers of effective AI-supported knowledge exchange.

To fully leverage the potential of GenAI, organizations must ensure that their implementation strategies are not limited to financial justification or operational efficiency. Instead, they should adopt a more holistic approach that emphasizes strategic alignment, cross-functional cooperation, and employee engagement. Balancing economic performance with an inclusive, knowledge-driven culture will be essential to achieve sustainable and collaborative value from GenAI in supply chain contexts.

5. Discussion and Conclusion

The findings of this study provide significant insights into the role of generative artificial intelligence (GenAI) in enhancing knowledge exchange processes within supply chains. The empirical results confirm that the application of GenAI technologies such as ChatGPT and DALL·E positively impacts several critical areas, including real-time communication improvement, forecasting efficiency, and the overall effectiveness of knowledge sharing. Organizations that demonstrated higher awareness of GenAI tools and greater accessibility to these technologies reported notable improvements in decision-making processes and inter-organizational collaboration. These outcomes support the premise that GenAI facilitates faster, more accurate knowledge dissemination, helping to overcome traditional barriers such as information silos and fragmented communication channels. Despite the promising potential of GenAI, the study also identified significant barriers to its widespread adoption. Limited availability of GenAI tools and insufficient organizational structures for

knowledge management emerged as key obstacles. Additionally, concerns regarding data security and ethical use of AI-generated content persist across industries. These challenges align with the observations of Ooi et al. (2024) and Perera et al. (2021), who emphasized the need for robust governance frameworks to mitigate risks associated with misinformation, algorithmic bias, and compliance with regulations such as the EU AI Act. Sectoral differences in GenAI adoption were also evident. Companies in the logistics and manufacturing sectors exhibited a higher degree of GenAI integration compared to the retail sector. Organizations operating in logistics and manufacturing, where real-time data exchange and predictive analytics are critical, have been more proactive in adopting GenAI solutions. In contrast, retail companies showed a more cautious approach, driven by heightened concerns about data protection and the unpredictability of AI-generated content. These findings are consistent with previous research by Hu and Zhao (2024), which indicated that industries with operational dependencies on real-time information processing are more inclined to invest in AI technologies. In relation to the existing literature, this study extends prior knowledge by providing empirical evidence specifically focused on the application of generative AI in knowledge exchange within supply chains—an area that has been underexplored compared to studies centered on traditional predictive AI models (Tao, 2020; Shang et al., 2024). Unlike previous works that largely addressed automation and operational optimization, the current study highlights GenAI's unique contributions to enhancing collaborative practices and dynamic knowledge flows across distributed supply networks. From a practical perspective, the findings suggest that companies aiming to leverage GenAI for competitive advantage in supply chain management should prioritize three strategic actions. First, they should invest in broadening employee awareness and technical competencies related to GenAI tools to increase organizational readiness. Second, it is critical to ensure the widespread availability and accessibility of scalable GenAI applications tailored to sector-specific needs. Third, firms must develop clear knowledge governance frameworks that address ethical considerations, data integrity, and compliance with emerging AI regulations. To translate these insights into actionable strategies, we propose a three-stage GenAI Management Integration Framework (GMIF) tailored for supply chain environments. First, the Preparation Phase requires organizations to assess technological readiness, including IT infrastructure, data maturity, and employee digital competencies. This phase should include awareness campaigns and GenAI literacy programs to ensure strategic alignment between stakeholders. Second, the Implementation Phase emphasizes modular deployment of GenAI tools—starting with communication automation and decision-support systems—under strict compliance with AI governance frameworks such as the EU AI Act. During this stage, firms should assign formal roles for AI-knowledge oversight, ensuring traceability and accountability for generated content. Third, the Sustainability Phase focuses on continuous evaluation and adaptation of GenAI practices through performance audits, stakeholder feedback loops, and cross-sector benchmarking. These phases aim to facilitate structured, ethical, and scalable integration of GenAI into SCM knowledge management models. Importantly, this framework can be adapted to sector-specific dynamics, as demonstrated by the differentiated adoption trajectories observed between logistics, manufacturing, and retail in this study. Overall, the study emphasizes that while GenAI offers transformative opportunities for supply chain knowledge management, its successful adoption requires a strategic, structured, and ethically responsible approach.

6. Conclusion

This study examined the impact of generative artificial intelligence (GenAI) on knowledge exchange processes within supply chains, focusing on key areas such as real-time communication, forecasting efficiency, and organizational knowledge-sharing practices. The findings confirmed that greater awareness and accessibility of GenAI tools are strongly associated with improved decision-making, enhanced collaboration, and more effective knowledge management across supply chain networks. However, barriers such as limited tool availability, unclear organizational responsibility for knowledge management, and concerns about data security and ethical use of AI-generated content continue to hinder widespread adoption. Despite providing important insights, the study is not without limitations. The research was geographically restricted to Central Europe (Poland, the Czech Republic, and Slovakia), which may limit the generalizability of the findings to other regions. Additionally, the study relied on self-reported survey data, which may be influenced by subjective perceptions rather than objective measurements of GenAI adoption and effectiveness. Future research should aim to address these limitations by conducting in-depth case studies within individual organizations to explore specific adoption paths and challenges. Qualitative research approaches, such as interviews and focus groups, could provide richer insights into organizational dynamics, employee perceptions, and leadership strategies related to GenAI integration. Moreover, longitudinal studies tracking the implementation of GenAI technologies over time would be valuable to assess their evolving impact on supply chain performance and innovation capabilities. In conclusion, while GenAI presents transformative opportunities for enhancing knowledge exchange in supply

chains, achieving its full potential requires strategic investment in technology, governance structures, and human competencies.

Ethics Declaration: Ethics approval was not required.

AI Declaration: AI tools were not used to create this article.

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