



Identification of Innovative Trends with Generative AI: An Information System Success Model

Masterarbeit

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Research Summary

Introduction

The accelerated evolution of technology is profoundly influencing the corporate environment, restructuring industries and modifying competitive dynamics. Among the numerous technological innovations, artificial intelligence (AI) is a particularly significant driver of this transformation. AI technologies have permeated various aspects of business operations, fundamentally altering the way organizations function (Perifanis and Kitsios, 2023, p. 1; Yathiraju et al., 2023, pp. 5-6). One of the most intriguing recent developments in the field of artificial intelligence is the emergence of generative AI, which has rapidly gained significant interest from businesses around the globe. Renowned for its ability to generate original content, generative AI has become a pivotal area of focus for companies seeking to gain a competitive advantage through AI (Kanbach et al., 2024, p. 1190).

Currently, organizations are at disparate stages of integrating generative AI into their operations. Some have implemented AI-driven solutions and are experiencing notable gains through the adoption. However, many businesses are still attempting to comprehend the full range and potential of generative AI (R. Gupta et al., 2024, p. 9). In this context of ongoing research and development, the potential of generative AI in innovation management is particularly promising. The capacity to identify and capitalize on emerging trends is of critical importance in the initial phase of innovation. Generative AI may offer a transformative approach to market exploration and screening by analyzing vast datasets and generating insights that traditional methods may fail to discern (Bilgram and Laarmann, 2023, p. 19). Despite the growing interest in the rapid advancements of generative AI and the fact that firms are already experimenting with practical applications, there exists a notable research gap, particularly in the utilization within the innovation process (Cimino et al., 2024, p. 2). The existing research indicates that the discovery phase, which sets the foundation for successful innovation, has not received sufficient scholarly attention and therefore calls for more in-depth research and documentation (D. L. Roberts and Candi, 2024, p. 10). This gap in the literature encompasses the evaluation of the efficiency and efficacy of generative AI in trend identification, as there is a scarcity of empirical evidence concerning its impact relative to traditional methods. Furthermore, there is a paucity of specific investigations into how generative AI can be adopted to aid in trend identification during the discovery phase (Holmström and Carroll, 2024, p. 21). A notable absence of comprehensive frameworks and models exists, illustrating how generative AI can be effectively implemented across various regions and industries to identify innovative trends and analyze market opportunities. The existing literature does not provide detailed practical guidelines that demonstrate the real-world

applications of generative AI in this context (Al-khatib, 2023, p. 10).

It is essential to address this research gap, as the ability to swiftly and accurately identify trends is crucial for organizations aiming to maintain a competitive edge in today's rapidly changing markets (Bilgram and Laarmann, 2023, p. 19). An understanding of the impact of generative AI on improving trend identification can facilitate more informed decision-making processes. This improvement in the innovation process can enhance overall business performance by aligning strategies with the most current and impactful trends, thus improving the efficacy of business operations (Sedkaoui and Benaichouba, 2024, pp. 1-2). Moreover, the absence of frameworks and models may impede practitioners' ability to comprehend and operationalize generative AI solutions within their innovation processes. It is imperative that companies receive guidance on how to adopt and implement generative AI in a confident and effective manner, in order to ensure that they are able to maximize the benefits of this technology while minimizing any potential risks (Al-khatib, 2023, p. 10).

The closing of this research gap has the potential to foster a more dynamic and responsive innovation landscape. As generative AI continues to evolve, staying informed about its impact and applications is essential for organizations to be proactive in their innovation efforts. Providing organizations with the knowledge and tools necessary to effectively leverage generative AI in their innovation processes will help them remain competitive and agile in a continually evolving business environment (Sundberg and Holmström, 2024, p. 569).

The objective of this thesis is to bridge the identified research gap in the existing literature by developing an information system (IS) success model that is both theoretically robust and practically applicable. The primary focus of this model is to examine the influence of generative AI on the identification of innovative trends and its adoption in this context. The findings aim to provide valuable insights into the benefits, applications and successful implementation of generative AI in the innovation process, as documented in existing literature, and how these findings translate to the identification of innovative trends in organizations. To effectively address the research gap, the following research questions are outlined:

RQ1: *How can generative AI improve the identification of innovative trends?*

RQ2: *How can generative AI be successfully adopted and implemented to improve the identification of innovative trends?*

This thesis is comprised of seven chapters, which collectively provide a thorough investigation of the research objective. Following the introduction, the theoretical background and research methods are outlined. Subsequently the research process is delineated, including the execution of an intelligent literature review and the establishment of the proposed research model based on the updated ISS model and TOE framework. Additionally, the data collection and results of the data analysis addressing the research questions are presented. Thereafter, the research process and findings are discussed and reflected by comparing them with the identified literature and similar studies from other research areas. The discussion concludes with the theoretical implications for research and practical implications for organizations. In the sixth chapter, the limitations of this thesis are acknowledged and suggestions for future research are provided. The last chapter concludes the research with a summary of the entire thesis.

Chapter 7

Conclusion

This thesis presents an information system success model designed to examine the impact and successful adoption of generative AI for identifying innovative trends. The extant literature is deficient in its delineation of generative AI's influence in this context and in providing robust frameworks that demonstrate the factors affecting its implementation. In a competitive environment, organizations require strategic guidance in order to maximize the benefits of this technology while minimizing any potential risks. The presented model contributes to the existing research by providing a broader theoretical understanding and practical guidelines for managers, thereby closing the identified research gap and addressing the two proposed research questions: (1) *how can generative AI improve the identification of innovative trends*, and (2) *how can generative AI be successfully adopted and implemented for the identification of innovative trends*.

The research process for developing this model commenced with the integration of the updated ISS model with the TOE framework based on the works of Aoun, Vatanasakdakul and Y. Chen (2011) and Ghobakhloo and Tang (2015). An intelligent literature review was conducted upon the constructs of these models by employing several databases and a concept-centric approach. This allowed for the retrieval and synthesis of the most notable contributions and the identification of similar relevant articles from this research area. A total of 67 articles were analyzed to determine relationships among relevant factors regarding the impact and successful adoption of generative AI, which resulted in several hypotheses. Subsequently, a global survey was conducted, comprising 164 participants, primarily innovation managers. The collected data was analyzed using PLS-SEM to confirm the model's reliability and validity and to test the hypotheses. The findings of the data analysis were subjected to reflection, discussion, and comparison with results from other research areas, resulting in implications for both theory and practice. Lastly, the limitations of this thesis were delineated, and a prospective trajectory for future research was presented.

In conclusion, the developed information system success model demonstrates the impact of generative AI on the identification of innovative trends. The deployment of generative AI in this context enables enhanced efficiency and effectiveness through the acceleration of information processing and the expansion of access to data and search spaces. Furthermore, the model elucidates pertinent factors concerning the implementation of generative AI, including regulatory concerns and system costs, which currently represent a primary organizational focus. Additionally, it identifies emerging factors such as information quality and competitive

pressure that may shift the focus of future research.

This information system success model serves as a foundation for future research on generative AI in the innovation process. Moreover, it offers a strategic guide for organizations seeking to understand the impact of and successfully adopt generative AI for identifying innovative trends. Thus, this thesis contributes to fostering a more dynamic and responsive landscape of innovation.