Academic Education Publishing House

Economic Society and Humanities Vol. 1 No. 10, 2024

SWOT Analysis of AI Empowerment in Leading Enterprises Driving Industry Innovation

Qiongqiong Wei, Yang Wang, Yanhong Xu, Lei Zhou*, Yongneng Tan
Qingdao University of Science and Technology, Qingdao, Shandong, China
**Corresponding Author.*

Abstract: Under the backdrop of rapid advancements in artificial intelligence (AI), the role of leading enterprises is shifting from a traditional resource-driven approach to a technology-driven and ecosystem-oriented model. Through AI empowerment, these enterprises not only enhance their core competitiveness but also foster innovation and upgrading across the entire industry through technology diffusion and value collaboration. However, in driving industry innovation, leading enterprises face multiple challenges in both internal technology management and external ecosystem collaboration. This study uses SWOT analysis as its core framework to systematically evaluate the impact of AI empowerment on leading industry innovation from four perspectives: Strengths, Weaknesses, Opportunities, and Threats. The findings reveal that AI technology plays a critical role in advancing industry standard-setting, optimizing resource allocation, and enhancing the efficiency of technology diffusion across industries, but it also faces challenges such as ethical issues in technology, international competition, and regulatory uncertainty. Based on the results of the SWOT analysis, this paper proposes an integration strategy to maintain a long-term leadership position in the industry. This research not only enriches the theoretical framework for AI's role in enabling leading enterprises to drive industry innovation but also offers practical insights for leading enterprises and decision-makers.

Keywords: Artificial Intelligence; Leading Leadership; Industry Innovation; SWOT Analysis; Strategic Optimization

1. Introduction

The rapid development of artificial intelligence (AI) is profoundly affecting the innovation models of various industries. As the leader of industry innovation, how to use AI technology to lead industry innovation has become the focus of academia and practice field. As an important tool for strategic planning, SWOT analysis (strengths, weaknesses, opportunities, threats) is an important tool that can systematically evaluate the internal and external environment of head enterprises enabled by AI. However, the existing research mainly focuses on the impact of AI on the internal innovation ability of head enterprises and lacks a systematic analysis of how head enterprises use AI to lead the innovation of the whole industry. Therefore, this paper aims to fill this research gap and use SWOT analysis to explore the path and strategy of leading the industry innovation under AI power.

2. Review of the Literature

SWOT analysis was first proposed by Andrews, a senior professor of management at the University of San Francisco, in the 1960s, aiming to help head companies identify internal strengths and weaknesses, as well as external opportunities and threats, to develop effective strategic planning. Over time, SWOT analysis has been widely used in the strategic management of various organizations, and it has become an important tool for making strategic decisions.

The SWOT analysis method systematically evaluates the internal and external environment of the head enterprises, helping the head enterprises to identify the core competitiveness and potential risks, and to develop a strategy [1] to adapt to the market changes. In practice, SWOT analysis is widely used in the market entry strategy, product development, resource allocation and other aspects of head enterprises, guiding head enterprises to maintain competitive advantage

in the complex and changeable environment [2-5].

AI technology has improved the innovation ability of head enterprises [6] through data analysis, machine learning and automation. Specifically, AI can accelerate the product development cycle, optimize the operation process, and improve the customer experience, to enhance the market competitiveness of the top enterprises [7-9]. However, the application of AI technology also brings challenges such as data privacy and ethics, which require head enterprises to deal with [10] in the process of innovation.

Existing research mainly focuses on the impact of AI on the internal operation and innovation of head enterprises, and less discusses how head enterprises can use AI technology to lead the innovation of the whole industry. In addition, there is still a lack of systematic research on the role of AI technology in industry standard-setting and ecosystem construction. Therefore, it is necessary to deeply explore the path and strategy of leading the industry innovation under AI empowerment.

To sum up, the existing research has shortcomings in the following aspects: lack of systematic analysis of the head enterprises leading the innovation of the industry enabled by AI, the existing literature pays more attention to the internal innovation of the head enterprises, and lack of discussion on how the head enterprises use AI technology to lead the industry innovation. The applicability of SW OT analysis in an AI environment is insufficient. With the development of AI technology, the applicability of traditional SWOT analysis needs to be reassessed, but related studies are scarce.

Because of the above shortcomings, the contribution of this paper is to combine SWOT analysis with AI technology, and systematically evaluate the internal and external factors of head enterprises leading the industry innovation under AI, to provide a new perspective for the strategic planning of head enterprises. Put forward strategic suggestions for leading enterprises to lead the industry innovation under AI empowerment, and provide a reference for head enterprises to develop effective industry-leading strategies in the AI era. Through the above research, this paper aims to enrich the application scenarios of SWOT analysis, deepen the understanding of the industry innovation of leading enterprises under AI power, and provide theoretical support and practical guidance for the strategic planning and industry innovation of head enterprises.

3. Research Methods

3.1 Study Design

In this study, SWOT analysis was used to systematically evaluate the internal and external influencing factors of AI enabling head enterprises leading the industry innovation from the four dimensions of Strengths, Weaknesses, Opportunities and Threats. The SWOT matrix to build the analysis framework, combined with the literature research and case analysis, to discuss how the head enterprises can achieve long-term industry-leading goals by integrating internal resources and the external environment.

3.2 Data Sources

Data from: By searching Web of Science, Scopus and other databases, academic papers were obtained, documents related to AI empowerment, industry innovation and SWOT analysis were selected, and core theories and practice cases were refined. Select typical leading companies, such as Tesla Huawei, and Google, that lead industry innovation under AI power to analyze their technology layout, market strategy, and industry collaboration mechanism. Referring to the industry analysis report and relevant government policy documents issued by well-known international consulting institutions, we obtain the background and support information of the leading enterprises in the industry of technology innovation.

3.3 Construction of the SWOT Analysis Framework

Combined with the enabling characteristics of AI technology, this paper adjusts the adaptation of the traditional SWOT analysis framework:

Strengths: enterprises' core capabilities in AI technology research and development, industry-standard development and resource integration.

Weaknesses: high cost, high complexity in AI

technology implementation, as well as internal management and collaboration weaknesses.
Opportunities: Policy support, demand growth in emerging markets, and international cooperation opportunities.
Threats: Increased technological competition, uncertainty in the international market, and the ethical risks of AI technologies.

3.4 Analysis Method and Process

First, data sorting and factor classification were conducted, and literature and case data were sorted out. The factors related to AI enabling head enterprises to lead industry innovation were divided into two categories: internal (Strengths and Weaknesses) and external (opportunities and threats). Secondly, the SWOT matrix is constructed, and the key factors obtained by the analysis are included in the SWOT matrix to identify the main drivers and hindering factors of AI-enabling head enterprises. Finally, dynamic integration analysis was conducted, with targeted optimization suggestions through SO (strengths-opportunity combination), WO (advantage-opportunity combination), ST (strengths-threat combination) and WT (weaknesses-threat combination) strategies.

4. The Results and Discussion of the Swot Analysis

This part is based on the results of SWOT analysis, which comprehensively shows the internal and external influencing factors of the head enterprises leading the industry innovation under the power of AI, and puts forward coping strategies through integrated analysis. On this basis, the core role of AI technology in the industry innovation ecology and the challenges and response paths faced by the leading enterprises in the process of leading the industry innovation are discussed.

4.1 SWOT Analysis Results

4.1.1 Strengths include technology research and development capabilities, ecological collaboration capabilities, and market leadership position
Technology research and development capability: AI technology helps leading enterprises to improve industry technology standardization and technology diffusion efficiency through algorithm optimization and data analysis. Ecological synergy capability: Enterprises can integrate supply chains and R&D partners through AI empowerment to build an industry innovation ecosystem. Market leadership: Companies with brand influence are more likely to use AI technology to lead the industry technology trend.
4.1.2 Weaknesses include high implementation costs, data privacy and security issues, and insufficient organizational adaptability
High implementation cost: AI technology development and deployment require a lot of capital investment, which may form a technical threshold for small and medium-sized enterprises. Data Privacy and Security Issues: AI technology faces challenges in data use and privacy protection in cross-industry collaboration. Lack of organizational adaptability: Traditional enterprises may face cultural conflicts and management mode adjustment problems when introducing AI technology.
4.1.3 Opportunities include policy support, emerging market demand and international technical cooperation
Policy support: worldwide, governments provide strong policy support for the development and industrialization of AI technologies, including tax incentives and R&D subsidies. Demand in emerging markets: For example, the market demand in new energy, intelligent manufacturing and digital economy is growing rapidly, providing a broad space for enterprises to lead the industry in innovation. International technology cooperation: Enterprises can accelerate the iteration and promotion of AI technology through global technology cooperation.
4.1.4 Threats include uncertainty in the international market, intensified technical competition and ethical disputes
International market uncertainty: Geopolitical tensions and international trade barriers may limit corporate technology export and market expansion. Technology competition intensifies: the monopoly advantage of technology giants makes the entry barriers of the industry gradually increase. Ethical controversy: the ethical issues of AI technology in terms of algorithm fairness, data security and social impact may pose a threat to corporate reputation.

4.2 SWOT Integration and Discussion

Through the integration of SWOT analysis

results, the following four strategies are proposed (Table 1).

4.3 Discussion: The dynamic Mechanism of Leading Enterprises to Lead Industry Innovation under Ai Empowerment

SWOT analysis shows that the core advantage of AI technology enabling head enterprises in the industry-leading lies in their resource integration and technology diffusion ability. Head enterprises should further build a collaborative innovation ecology to accelerate the diffusion of technology and improve industry technical standards. Top enterprises need to make full use of policy support to seize emerging markets and develop the future based on the demand forecasting function of AI technology. In the face of uncertainty and ethical disputes in the international market, the leading enterprises need to optimize the risk management system, and strengthen the construction of technical compliance and social responsibility, to achieve sustainable industry leadership.

Table 1. SWOT Strategies

Policy type	Integrate content	living example
SO policy	Use technological advantages and policy support to seize emerging markets and expand the technological influence of the industry.	Huawei Get domestic policy support through AI chip technology to seize the 5G network and intelligent manufacturing market.
WO policy	Through external cooperation and policy resources to make up for the internal technology implementation costs and management shortcomings.	Tesla is working with suppliers and research and development institutions to reduce the cost of developing autonomous driving systems and accelerate technology standardization.
ST policy	Use technical barriers to reduce competitive threats, while optimizing ecological coordination to cope with international risks.	Google builds search algorithm barriers through patent protection and strengthens partnerships with developers around the world to ease geopolitical risks.
WT policy	Optimize the internal organizational structure and reduce the adverse impact of ethical disputes on reputation and market.	Amazon has established an AI ethics committee to improve the social acceptance of AI technology in terms of privacy protection and fairness.

5. Strategic Recommendations and Conclusions

5.1 Strategic Recommendations

Based on SWOT analysis and discussion, this study puts forward four types of strategic suggestions for leading industry innovation under AI empowerment to help them achieve long-term industry leadership and sustainable development goals.

5.1.1 SO strategy: strengthen technical advantages and seize market opportunities

Head enterprises should make use of the research and development capabilities of AI technology and industry resource integration advantages to actively seize the opportunities brought by policy support and emerging markets. Promote the development of industry standards. Through the innovative application of AI technology, the head enterprises can play a leading role in the formulation of industry standards and expand the influence of technology. Focus on the high-growth markets. For example, in the field of new energy and intelligent manufacturing, product design and supply chain management are optimized through AI technology to increase market share. Build an open innovation platform, strengthen cooperation with universities, research institutions and ecological partners, and promote technology collaboration inside and outside the industry.

5.1.2 WO strategy: optimize resource allocation and make up for the shortcomings of technology and management

Head enterprises can use external opportunities to alleviate the deficiencies in internal resources and management. Introduce the external resources. Through cooperation with the upstream and downstream head enterprises and research and development institutions in the supply chain, the cost pressure of AI technology development is reduced. Improve management adaptability. Because of the impact of AI technology on traditional business models, the head enterprises need to optimize the organizational

structure and culture, promote cross-department collaboration, and improve the efficiency of technology transformation. Data governance and security assurance. Improve the efficiency of collaboration across departments and organizations by establishing unified data-sharing standards and privacy protection mechanisms.

5.1.3 ST strategy: strengthen technical barriers, to deal with competition and risks

Head enterprises should make use of technological advantages to build technical barriers that are difficult to replicate, and reduce international risks through ecological coordination. First, we need to protect intellectual property rights. Through patent application and technical secret management, protect AI core technology and prevent competitors from imitating. Second, we should strengthen ecological coordination. Build a whole-process collaboration mechanism covering research and development, production and market, and improve the speed of technology diffusion inside and outside the industry. Finally, improve compliance capabilities. In view of the complex environment of geopolitics and the international market, the top enterprises should strengthen the compliance of technology output and reduce the impact of policy risks on the business.

5.1.4 WT strategy: to improve internal governance and reduce external threats

Head enterprises need to start from internal governance to reduce the impact of external threats and establish a risk response mechanism. First, establish an ethical framework for AI. In view of algorithm bias and data privacy issues, the top enterprises need to establish a technical ethics committee to ensure the fairness and transparency of the application of AI technology. Second, the diversified market layout. Through global cooperation, reduce the dependence on the single market and spread the uncertainty risks in the international market. Finally, the technical risk assessment mechanism. Head companies need to regularly assess the application risks of AI technology applications, especially in terms of data abuse and technology failure.

5.2 Conclusion

Based on the SWOT analysis framework, this study systematically discusses the internal and external factors of leading industry innovation under AI empowerment and puts forward the integration strategy suggestions. Research shows that AI technology provides important support for head enterprises to lead industry innovation by improving the resource optimization ability and technology diffusion efficiency of head enterprises. At the same time, policy support and the demand of emerging markets provide development opportunities for top enterprises, but high costs, ethical disputes and international competition also pose potential challenges. Through the integrated application of SO, WO, ST and WT strategies, leading enterprises can give full play to the enabling role of AI technology, build technical barriers, optimize resource allocation, and enhance ecological coordination capabilities, to achieve long-term industry leadership and sustainable development goals.

5.3 Study Limitations and Prospects

The study limitation is that this study is mainly based on literature combing and case analysis, and the lack of large-scale empirical data support, which may have a certain impact on the universality of the research results. Second, the subjectivity of SWOT analysis may bias the weight allocation and prioritization of some factors.

In the future, we can explore the leading mechanism and differentiation path of AI enabling head enterprises in different industries. The applicability and validity of the SWOT analysis results were verified by empirical studies and quantitative analysis. Explore the long-term impact of technology ethics and policy support on the head enterprises leading the industry innovation, and put forward more comprehensive strategic suggestions. This study provides a systematic analytical framework and practical guidance for leading enterprises to lead the industry innovation under AI empowerment, which not only deepens the understanding of AI technology but also provides an important reference for policymakers and industry leaders.

Acknowledgments

This work is supported by two Key R&D Program (Soft Science Project) of Shandong

Province, China (2024RZB0303, and 2023RZB02015). It is also funded by multiple projects of the Jiusan Society Qingdao Municipal Committee.

References

[1] Zou Jing & Gan Chengjiu. (2022). Digital transformation of smes based on the perspective of SWOT. Finance and Economics (10), 92-96.

[2] Guo Quan, Xia Qing & Ma Xueqin. (2022). Analysis of the development strategy selection of agricultural products e-commerce enterprises- -Take TT Company as an example. Agricultural Science of Jiangsu Province (19), 232-236.

[3] Jiang Jiahui & Ye Liuqi. (2023). Strategic analysis of TCM industry in Anhui Province based on SWOT-AHP model. Northern Horticulture (19), 135-142.

[4] Zeng Zhen. (2018). Research on cooperation mechanism and strategy of agricultural products cold chain logistics in Guangxi Beibu Gulf Economic Zone Analysis based on SWOT. Business Economics Research (09), 160-162.

[5] Qian Haichao, Sun Junhao & Yao Rui. (2023). Thinking on innovation and upgrading of chemical Materials Industry--Based on SWOT analysis. Scientific Management Research (05), 63-71.

[6] Zeng Guoan, Xu Zhenhuan & Cheng Yangyang. (2024). How manufacturing digitization enables enterprise innovation--based on the dual perspective of digital input sources and value chain spillover. Fujian Forum (Humanities and Social Sciences edition) (08), 94-116.

[7] Chen Jianxing & Pan Shuang. (2024). Digital infrastructure enabling enterprise digitization- -based on the perspective of digital technology innovation. Statistics and Decision-making (21), 173-178.

[8] Ma Yong & Xia Tiantian. (2024). The Empowerment of Public Innovation Platforms for the Development of New Productive Forces in "Specialized, Refined, Unique, and Innovative" Enterprises. Enterprise Economy, (10), 60-72.

[9] He Jianhong, Xu Yaode, Li Lin & Yin Ximing. (2024). Can the leading enterprises in the emerging technology innovation ecology empower their followers to enhance their leading power? China Soft Science (09), 210-224.

[10] Feng Qiliang, (2024). Angel & Fang Wei. Research on the influence of key core technology innovation in Chinese high-tech manufacturing enterprises. Journal of Management 1-10.