

A Study on the Relationship Between Quality Monitoring Technology Innovation in Auto Parts Enterprises and National Interest

Wenwei Miao¹

¹ Ningbo Preh Joyson Automotive Electronics Co., Ltd., Ningbo, Zhejiang, China

Correspondence: Wenwei Miao, Ningbo Preh Joyson Automotive Electronics Co., Ltd., Ningbo, Zhejiang, China.

doi:10.56397/IST.2024.09.10

Abstract

This paper aims to explore the relationship between the innovation of quality monitoring technology in auto parts enterprises and national interests. By providing an overview of the development history, current main types, and characteristics of quality monitoring technology, as well as the driving forces and trends of technological innovation, it elaborates on the positive impact of quality monitoring technology innovation on auto parts enterprises, including improving product quality and reliability, enhancing production efficiency, reducing costs, and strengthening market competitiveness. At the same time, by analyzing typical enterprise cases, it specifically demonstrates how technological innovation promotes the realization of national interests, such as promoting industrial upgrading, ensuring economic security, and enhancing international competitiveness. Finally, the research concludes and puts forward suggestions and prospects for future development, emphasizing that the government, enterprises, and all sectors of society should work together to promote the innovation of quality monitoring technology in China's auto parts enterprises to a new level.

Keywords: auto parts enterprises, quality monitoring technology innovation, national interest, industrial upgrading, economic security, international competitiveness

1. Introduction

The auto parts industry, as an essential part of the automotive industry, holds a significant position in the national economy. Auto parts enterprises not only provide key components and assemblies for vehicle manufacturers but also play a crucial role in vehicle performance, safety, and reliability. With the rapid development of the automotive industry, consumers' demands for vehicle quality are increasingly high, posing a significant challenge for auto parts enterprises. To meet market demands and enhance competitiveness, innovation in quality monitoring technology has become an indispensable part of auto parts enterprises.

1.1 Purpose and Significance of the Study

The purpose of this study is to delve into the relationship between innovation in quality monitoring technology in auto parts enterprises and national interests. By analyzing the impact of quality monitoring technology innovation on auto parts enterprises and how these impacts further transmit to the national economic development and industrial progress, it reveals the important role of quality monitoring technology innovation in safeguarding national interests.

2. Overview of Quality Monitoring Technology Innovation in Auto Parts Enterprises

2.1 Development History of Quality Monitoring Technology

The development of quality monitoring technology in auto parts enterprises has gone through several stages. In the early days, traditional quality monitoring methods mainly relied on manual inspection and simple measuring

tools, such as calipers and micrometers. Although these methods could ensure product quality to some extent, they had the disadvantages of low efficiency, low accuracy, and susceptibility to human factors.

With the continuous advancement of technology, quality monitoring technology has gradually evolved towards automation and intelligence. In the mid-20th century, some simple automated inspection equipment began to be applied in the production of auto parts, such as automatic inspection production lines and machine vision inspection systems. The emergence of these devices greatly improved inspection efficiency and accuracy, reducing human error.

Entering the 21st century, with the rapid development of information technology, big data analysis, artificial intelligence, and other technologies have gradually been applied to the field of quality monitoring. Intelligent inspection equipment can achieve real-time monitoring and data analysis of products, identifying potential quality issues in a timely manner. Big data analysis can mine and analyze a large amount of quality data to identify the root causes of quality problems, providing decision support for enterprises.

2.2 Current Main Types and Characteristics of Quality Monitoring Technology

Intelligent Inspection Equipment: Intelligent inspection equipment is an important part of the current quality monitoring technology. It features high precision, high efficiency, and a high degree of automation. For example, machine vision inspection systems can quickly scan and analyze products through cameras, detecting surface defects and size deviations; automated coordinate measuring machines can accurately measure the three-dimensional size of products to ensure they meet design requirements. In addition, intelligent inspection equipment can also be networked with production equipment to achieve real-time data transmission and feedback, promptly adjusting production processes and improving product quality.

Big Data Analysis: Big data analysis technology plays an increasingly important role in quality monitoring. By collecting and analyzing a large amount of data in the production process, such as production process parameters, inspection data, equipment operation data, etc., enterprises can discover correlations and patterns in the data, predict the occurrence of quality issues, and take preventive measures in advance. Big data analysis can also help enterprises optimize production processes, improve production efficiency, and reduce costs.

Non-Destructive Testing Technology: Non-destructive testing technology is a technique that inspects products without destroying them. It includes various methods such as ultrasonic testing, radiographic testing, and magnetic particle testing. Non-destructive testing technology can detect internal defects of products, such as cracks and pores, ensuring product quality and safety.

Online Monitoring Technology: Online monitoring technology can monitor key parameters in the production process in real-time, such as temperature, pressure, and humidity, and promptly detect anomalies and issue alarms. Online monitoring technology can help enterprises promptly adjust production processes to ensure the stability of product quality.

2.3 Driving Forces and Trends of Technological Innovation

Factors Driving Quality Monitoring Technological Innovation (1) **Changes in Market Demand.** As consumers' demands for car quality and safety are increasingly high, auto parts enterprises need to continuously improve product quality to meet market demands. This encourages enterprises to increase investment in quality monitoring technology innovation and improve quality monitoring standards. (2) **Advancement of Technology.** The continuous development of information technology, artificial intelligence, big data, and other technologies provides technical support for the innovation of quality monitoring technology. Enterprises can use these new technologies to develop more advanced quality monitoring equipment and systems, improving the efficiency and accuracy of quality monitoring. (3) **Increased Competitive Pressure.** The intensification of global competition poses a huge competitive pressure on auto parts enterprises. To stand out in market competition, enterprises need to continuously improve product quality and production efficiency and reduce costs. Innovation in quality monitoring technology has become an important means for enterprises to enhance competitiveness.

Future Development Trends (1) **Continuous Improvement of Intelligence and Automation.** The quality monitoring technology of the future will be more intelligent and automated, capable of automatic inspection, data analysis, fault diagnosis, and other functions, reducing human intervention and improving the efficiency and accuracy of quality monitoring. (2) **Wider Application of Big Data Analysis and Artificial Intelligence.** Big data analysis and artificial intelligence will become important directions for the development of quality monitoring technology. By analyzing and mining a large amount of quality data, enterprises can better understand the quality status of products, predict the occurrence of quality issues, and take preventive measures in advance. (3) **In-depth Integration with Production Processes.** Quality monitoring technology will be more deeply integrated with production processes, achieving real-time monitoring and feedback, promptly adjusting production processes, and improving the stability of product quality. (4) **Focus on Green Environmental Protection and Sustainable Development.** With the continuous improvement of environmental awareness, future quality

monitoring technology will pay more attention to green environmental protection and sustainable development. For example, non-destructive testing technology will be more widely used, reducing the destruction of products and the waste of resources.

In summary, the development history of quality monitoring technology has experienced a transformation from traditional methods to the application of modern intelligent, big data analysis, and other technologies. The main types of current quality monitoring technology include intelligent inspection equipment, big data analysis, non-destructive testing technology, and online monitoring technology, each with its own characteristics and advantages. The driving forces of technological innovation mainly include changes in market demand, technological progress, and increased competitive pressure, and the future development trends will be more intelligent, automated, data-driven, and environmentally friendly. Auto parts enterprises should pay close attention to the development trends of quality monitoring technology, increase innovation investment, and improve the level of quality monitoring to meet market demands and enhance competitiveness.

3. The Impact of Quality Monitoring Technology Innovation on Auto Parts Enterprises

3.1 Enhancing Product Quality and Reliability

Innovation in quality monitoring technology is of significant importance to the enhancement of product quality and reliability in auto parts enterprises. By introducing advanced technologies and equipment, enterprises can more accurately detect and control product quality parameters, thereby improving the stability and consistency of product quality.

Firstly, the application of intelligent inspection equipment makes the inspection process more precise and efficient. For instance, adopting high-precision sensors and advanced image processing technology can quickly and accurately detect product surface defects and size deviations. At the same time, these devices can also achieve real-time monitoring and data recording, facilitating enterprises to trace and analyze the production process, identify potential quality issues in a timely manner, and take corresponding improvement measures.

Secondly, the use of big data analysis technology helps enterprises to deeply understand the trends and influencing factors of product quality changes. By collecting and analyzing a large amount of quality data, enterprises can identify the root causes of quality issues, optimize production processes and workflows, thereby enhancing the stability and consistency of product quality. Moreover, big data analysis can also be used to predict the occurrence of quality issues and take preventive measures in advance to reduce the rate of defective products.

Lastly, technological innovation can also promote the improvement of enterprise quality management systems. For example, introducing automated quality control systems can achieve real-time monitoring and automatic adjustment of the production process, ensuring that product quality always meets standard requirements. At the same time, through the construction of information management systems, enterprises can achieve sharing and collaborative management of quality data, improving the efficiency and effectiveness of quality management.

3.2 Improving Production Efficiency and Reducing Costs

Technological innovation has a significant effect on optimizing the production process of auto parts enterprises, helping to improve production efficiency and reduce costs.

On one hand, the combination of intelligent inspection equipment and automated production lines can achieve automation and intelligence of the production process, reducing manual intervention and improving production efficiency. For example, automated assembly equipment can quickly and accurately complete the assembly work of parts, greatly shortening the production cycle. At the same time, the application of intelligent logistics systems can achieve automatic transportation and storage of raw materials and finished products, improving logistics efficiency and reducing logistics costs.

On the other hand, technological innovation can also help enterprises optimize production processes and workflows, reduce waste, and lower production costs. For instance, by analyzing data from the production process, enterprises can identify bottlenecks and waste in production, and then take measures to optimize and improve. In addition, the application of advanced manufacturing technologies such as 3D printing and laser cutting can improve material utilization and reduce waste, thereby lowering production costs.

3.3 Enhancing Enterprise Market Competitiveness

Technological innovation is a key factor for auto parts enterprises to meet customer needs and increase market share.

With the intensification of market competition, customers have increasingly higher requirements for product quality, performance, and personalized needs. Enterprises can meet customer needs by technological innovation, providing higher quality and more reliable products, thereby improving customer satisfaction and loyalty. For

example, by adopting advanced quality monitoring technologies to ensure the stability and consistency of product quality, enterprises can win the trust and reputation of customers.

At the same time, technological innovation can also help enterprises develop innovative and competitive products. For instance, by researching and developing new materials and processes, enterprises can produce lighter and higher-performance parts to meet the automotive industry's requirements for energy saving, emission reduction, and performance improvement. In addition, technological innovation can also support enterprises to provide personalized customization services to meet customers' special needs, further enhancing the market competitiveness of enterprises.

Moreover, technological innovation can improve the response speed and flexibility of enterprises. In the rapidly changing market environment, enterprises can adjust production processes and product designs in a timely manner, quickly launch new products that meet market demands, and thus seize market opportunities.

In summary, innovation in quality monitoring technology has an important impact on auto parts enterprises, which can improve product quality and reliability, enhance production efficiency and reduce costs, and strengthen the competitiveness of enterprises in the market, providing strong support for the sustainable development of enterprises.

4. The Relationship Between Quality Monitoring Technology Innovation and National Interest

4.1 Promoting National Industrial Upgrading

Technological innovation plays a key role in the upgrading of the automotive parts industry, having a profound impact on the related industrial chain.

Firstly, innovation in quality monitoring technology has driven the industry towards high-end, intelligent, and green development. By introducing advanced inspection equipment and data analysis technology, companies can improve the stability and consistency of product quality, producing more precise and complex parts to meet the automotive industry's demand for high-performance and reliable products. For example, intelligent inspection equipment can monitor quality parameters in real-time during the production process, promptly identify and adjust issues to ensure product quality meets higher standards. Meanwhile, big data analysis can help companies optimize production processes, increase efficiency, and reduce costs, thereby enhancing competitiveness.

Secondly, technological innovation has promoted collaborative development within the automotive parts industry. Innovation in quality monitoring technology allows companies to collaborate more effectively with upstream and downstream enterprises, integrating and optimizing the industrial chain. For instance, by establishing a quality data sharing platform, companies can share quality information with suppliers and customers in real-time, strengthening cooperation and communication, and improving the overall quality level of the industry chain. Additionally, technological innovation has spurred the growth of related industries, such as testing equipment manufacturing, software development, and data analysis, forming a more comprehensive industrial ecosystem.

Lastly, the upgrading of the automotive parts industry is significant for adjusting and optimizing the national economic structure. As the industry moves towards higher-end development, its proportion and status in the national economy will continue to rise, helping to drive the national economy from traditional manufacturing to high-end manufacturing, enhancing the country's economic strength and international competitiveness.

4.2 Ensuring National Economic Security

Innovation in quality monitoring technology is crucial for national economic security, reducing reliance on imported technology and ensuring stable national economic development.

On one hand, independently innovated quality monitoring technology can reduce companies' dependence on foreign technology, enhancing the country's independent innovation capabilities in the automotive parts sector. If companies overly rely on imported technology, they may face risks such as technological blockades and supply chain disruptions, threatening national economic security. By strengthening innovation in quality monitoring technology, companies can develop technologies and products with proprietary intellectual property rights, improving the country's technological level and discourse power in this field.

On the other hand, innovation in quality monitoring technology helps improve the quality and reliability of domestic automotive parts products, enhancing the competitiveness of domestic companies in the market. When domestic companies can produce high-quality automotive parts, they can reduce the demand for imported parts, lower the country's foreign dependence in the automotive parts sector, and safeguard national economic security. Moreover, innovation in quality monitoring technology can also promote the development of related domestic industries, driving employment and economic growth, providing a solid foundation for the stable development of the national economy.

4.3 Enhancing National Competitiveness in the International Market

Technological innovation is a key factor in improving the country's competitiveness in the field of automotive parts, enhancing the country's economic strength.

Firstly, advanced quality monitoring technology can improve product quality, making domestically produced automotive parts more competitive in the international market. In the global market, product quality is key for companies to win customer trust and market share. Through technological innovation, companies can ensure that product quality meets international standards and customer demands, increasing product value and thus gaining a greater competitive advantage in the international market.

Secondly, technological innovation can drive companies to continuously introduce new products and technologies to meet the diverse needs of the market. In the rapidly changing international market, only continuous innovation can maintain competitiveness. Through innovation in quality monitoring technology, companies can better understand market demands and trends, adjust product and technology R&D directions in a timely manner, and launch innovative products, improving market response speed.

Lastly, technological innovation can also promote the upgrading and structural adjustment of the national industry, enhancing the country's position in the international industrial chain. When the country's automotive parts industry has strong technological innovation capabilities, it can attract more international investment and cooperation, promote the industry towards high-end development, and enhance the country's influence and competitiveness in the international market.

In summary, the relationship between innovation in quality monitoring technology and national interests is closely linked, capable of promoting national industrial upgrading, ensuring national economic security, and enhancing national competitiveness in the international market. Therefore, the state should increase its support for technological innovation in quality monitoring, promote the development of the automotive parts industry, and contribute to the prosperity and security of the national economy.

5. Case Study

5.1 Selection of Typical Enterprise Cases

(1) Ningbo Preh Joyson Automotive Electronics Co., Ltd.

Ningbo Preh Joyson Automotive Electronics Co., Ltd. is a company with high visibility in the automotive parts field. The company has been committed to the innovation of quality monitoring technology, investing significant resources in the research and application of advanced testing equipment and technology. For example, the company has introduced intelligent online inspection systems capable of real-time monitoring of product quality parameters during the production process, identifying and resolving potential issues promptly. Additionally, the company utilizes big data analysis technology to deeply mine and analyze quality data, optimizing production processes, and improving product quality. Through these technological innovations, Ningbo Preh Joyson Automotive Electronics Co., Ltd. has achieved remarkable results in improving product quality and reliability, and its products have strong competitiveness in the market.

(2) Huayang Saint-Dragon (Ningbo) Co., Ltd.

Huayang Saint-Dragon (Ningbo) Co., Ltd. is another representative enterprise in the automotive parts industry. The company focuses on the innovation and application of quality monitoring technology, actively introducing advanced testing equipment and technology. For instance, the company has adopted high-precision coordinate measuring machines capable of accurately measuring the dimensions and shapes of complex parts, ensuring that products meet strict quality standards. At the same time, the company has established a comprehensive quality management system, detecting and resolving quality issues through comprehensive monitoring and data analysis of the production process. These technological innovations and management measures have earned Huayang Saint-Dragon (Ningbo) Co., Ltd. a good reputation in the automotive parts market, laying a solid foundation for the company's development.

5.2 Analysis of Technological Innovation and the Manifestation of National Interests in the Cases

(1) Ningbo Preh Joyson Automotive Electronics Co., Ltd.

- 1) **Enhancing Product Quality.** Ningbo Preh Joyson Automotive Electronics Co., Ltd. has improved the stability and consistency of product quality through technological innovation in quality monitoring, identifying defects and issues in products promptly to ensure that every product leaving the factory meets high-quality standards. High-quality products not only meet consumer needs and increase customer satisfaction but also enhance the overall quality level of the country in the field of automotive parts, strengthening the country's competitiveness in the international market.
- 2) **Promoting Industrial Upgrading.** The company's technological innovation has driven the upgrade of

the automotive electronics industry. By introducing advanced testing equipment and technology, the company has improved production efficiency, reduced production costs, and also promoted product innovation and upgrading. For example, the company's research and development of new automotive electronic products with higher performance and intelligent levels meet the market's continuously upgrading demands for automotive electronic products. This helps to drive the entire automotive parts industry towards high-end and intelligent development, promoting the optimization and upgrading of the national industrial structure.

- 3) **Enhancing National Economic Strength.** The growth and development of Ningbo Preh Joyson Automotive Electronics Co., Ltd. have contributed to national economic growth. The company's high-quality products are highly competitive in the international market, with increasing export volumes, creating more foreign exchange income for the country. At the same time, the company's technological innovation has also driven the development of related industries, such as testing equipment manufacturing and software development, forming a good industrial synergy effect and further strengthening the national economic strength.

(2) Huayang Saint-Dragon (Ningbo) Co., Ltd.

- 1) **Enhancing Product Quality.** Huayang Saint-Dragon (Ningbo) Co., Ltd. ensures the reliability of product quality by adopting high-precision testing equipment and a comprehensive quality management system. High-quality products not only improve the performance and safety of automobiles but also enhance the country's reputation and image in the automotive industry.
- 2) **Promoting Industrial Upgrading.** The company's technological innovation has promoted technological progress and upgrading in the automotive parts industry. By continuously improving testing technology and production processes, the company has increased the added value of products and driven the industry towards high-end development. At the same time, the company's innovative practices have also provided reference and demonstration for other companies, promoting the upgrade and development of the entire industry.
- 3) **Ensuring National Economic Security.** Huayang Saint-Dragon (Ningbo) Co., Ltd.'s efforts in technological innovation in quality monitoring have reduced dependence on foreign technology and enhanced the country's independent innovation capabilities in the field of automotive parts. This helps to ensure national economic security and reduce risks associated with technological dependence.

5.3 Summary of the Enlightenment and Reference Significance of the Cases

Increase Investment in Technological Innovation. The successful experiences of these companies show that technological innovation is key to improving competitiveness and realizing national interests. Other companies should increase their investment in the innovation of quality monitoring technology, actively introduce and develop advanced testing equipment and technology, and improve product quality and production efficiency.

Establish a Comprehensive Quality Management System. A comprehensive quality management system is an important guarantee for ensuring product quality. Companies should learn from the experiences in these cases, establish a sound quality management system, strengthen comprehensive monitoring and data analysis of the production process, and promptly identify and resolve quality issues.

Focus on Talent Cultivation. Technological innovation requires the support of high-quality talents. Companies should pay attention to talent cultivation, attract and train a group of professionals with innovative capabilities and practical experience to provide a strong guarantee for technological innovation.

Strengthen Industrial Collaborative Cooperation. The automotive parts industry is an interrelated industrial system where companies should strengthen collaborative cooperation, achieve resource sharing and complementary advantages. By establishing industrial alliances or cooperation platforms, companies can jointly carry out technology R&D, quality monitoring, and other work to promote the development of the entire industry.

In summary, the cases of these typical companies provide valuable experiences and insights for other automotive parts companies. By learning and drawing on these successful experiences, companies can continuously improve their level of quality monitoring technology and make greater contributions to the realization of national interests.

6. Conclusion and Prospects

6.1 Summary of Research Conclusions

This study has delved into the relationship between the innovation of quality monitoring technology in auto parts enterprises and national interests, reaching the following conclusions: Innovation in quality monitoring

technology is crucial for auto parts enterprises as it can enhance product quality and reliability, increase production efficiency, reduce costs, and strengthen market competitiveness. Moreover, such innovation has profound implications for national interests, including promoting industrial upgrading, ensuring economic security, and boosting competitiveness in the international market. Specifically, technological innovation has driven the industry towards high-end, intelligent, and green development, fostering the integration and optimization of related industrial chains and significantly impacting the adjustment and optimization of the national economic structure. Additionally, independent innovation in quality monitoring technology has reduced reliance on imported technology, enhancing the nation's independent innovation capabilities in this field and ensuring stable economic development. In the international market, advanced quality monitoring technology has improved product quality and value, making the country more competitive in the automotive parts sector and contributing to the nation's economic strength.

6.2 Suggestions and Prospects for Future Development

To promote innovation in quality monitoring technology in auto parts enterprises, the following suggestions are made:

- The government should increase support for corporate technological innovation, including financial support, tax incentives, and policy guidance, to encourage enterprises to increase R&D investment and enhance independent innovation capabilities.
- Enterprises should strengthen cooperation with universities and research institutions to jointly conduct technology development and talent cultivation, improving the efficiency and level of technological innovation.
- Establish a comprehensive quality monitoring technology standard system to regulate and manage quality monitoring technology, ensuring the effectiveness and sustainability of technological innovation.
- Strengthen international cooperation and exchange to learn from advanced international quality monitoring technologies and experience, enhancing the technical level and international competitiveness of Chinese auto parts enterprises.

Looking forward to future development, with the continuous advancement of technology and the changing market demands, innovation in quality monitoring technology for auto parts enterprises will face new opportunities for development. In the future, quality monitoring technology will become more intelligent, automated, and precise, with wider applications of big data analysis and artificial intelligence. At the same time, as the national emphasis and support for the automotive industry continue to grow, auto parts enterprises will achieve greater breakthroughs in technological innovation, contributing more to the development and security of the national economy. We believe that with the joint efforts of the government, enterprises, and all sectors of society, innovation in quality monitoring technology for China's auto parts enterprises will continue to reach new heights and achieve the goal of high-quality development.

As technology continues to evolve and market demands shift, the innovation of quality monitoring technology in the auto parts industry will embrace new opportunities for development. In the future, we anticipate that quality monitoring technology will become more intelligent, automated, and precise. Technologies such as big data analysis and artificial intelligence will see broader applications. With the increasing emphasis and support from the nation for the automotive industry, it is envisioned that auto parts enterprises in China will make significant breakthroughs in technological innovation, further contributing to the development and security of the national economy. We are confident that through the concerted efforts of the government, enterprises, and all sectors of society, the innovation of quality monitoring technology in China's auto parts enterprises will continue to reach new levels and achieve the goal of high-quality development.

In summary, this research has thoroughly investigated the relationship between the innovation of quality monitoring technology in auto parts enterprises and national interests, highlighting the importance of such innovation for both enterprises and the nation at large. It has underscored the need for collaborative efforts to foster an environment conducive to innovation and advancement in the field of quality monitoring technology.

References

- A. M. Ross, (2021). The Impact of Advanced Quality Monitoring Systems on Automotive Manufacturing. *Journal of Manufacturing Systems*.
- A. P. Patel, (2023). Technological Disruptions in Automotive Quality Inspection: Challenges and Opportunities. *Journal of Engineering and Technology Management*.
- C. D. Brown, (2020). The Evolution of Quality Management Systems in the Automotive Supply Chain. *International Journal of Production Economics*.

- E. J. Park, (2022). Sustainable Manufacturing Practices in the Automotive Industry: Quality Control as a Key Enabler. *Journal of Cleaner Production*.
- H. S. Kim, (2021). The Intersection of Quality Monitoring and Industry 4.0 in Automotive Production. *International Journal of Production Research*.
- J. R. Thompson, (2020). Quality Control and the Automotive Industry: A Review of Technological Innovations. *International Journal of Quality & Reliability Management*.
- L. H. Kim, (2021). The Role of Quality Assurance in Enhancing National Competitiveness: An Automotive Industry Perspective. *International Journal of Automotive Technology and Management*.
- M. A. Gonzalez, (2023). Big Data Analytics in Automotive Quality Management: A Case Study. *Journal of Big Data*.
- R. K. Singh, (2020). Innovations in Non-Destructive Testing for Automotive Applications. *NDT & E International*.
- S. P. Lee, (2022). Integrating AI and Machine Learning in Quality Control for Automotive Components. *International Journal of Advanced Manufacturing Technology*.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).