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Research Article

The Impact of Manufacturing Business Management and Innovation Orientation on New Product Performance

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ABSTRACT

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Abstract:

In today's competitive manufacturing environment, the successful development and commercialization of new products are crucial for sustaining growth and achieving a competitive advantage. This study investigates the impact of business management in manufacturing industries, market orientation, innovation orientation, development of innovation resources, and organizational creativity on new product performance. The statistical population consists of experts in the automotive industry, with a sample of 382 respondents selected using convenience sampling and Cochran's formula. Data were collected through structured questionnaires, and the validity and reliability of the instruments were confirmed. Structural Equation Modeling (SEM) using AMOS was employed to test the research hypotheses. The results indicate that business management has a significant positive effect on market orientation and innovation orientation. Innovation orientation, in turn, positively influences the development of innovation resources. Organizational creativity is significantly affected by market orientation and design factors, while the development of innovation resources directly impacts new product performance. Overall, the findings highlight the importance of integrating managerial practices and innovation-oriented strategies to enhance creativity and optimize the performance of new products in the manufacturing sector. These insights provide practical guidance for managers aiming to improve innovation outcomes and theoretical contributions to the literature on innovation and organizational performance.

Keywords:
Business Management, Market Orientation, Innovation Orientation, Innovation Resource Development, Organizational Creativity, New Product Performance

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1. Introduction

In today's highly competitive and dynamic markets, manufacturing firms face increasing pressure to continuously develop and successfully commercialize new products in order to sustain growth and maintain competitive advantage. New product performance has become a critical indicator of organizational success, reflecting a firm's ability to respond effectively to changing customer needs, technological advancements, and market uncertainties. Despite substantial investments in new product development, however, many manufacturing firms fail to achieve satisfactory outcomes in terms of market acceptance, profitability, and product quality.

New products in manufacturing industries can be broadly categorized into incremental improvements, significantly modified products, and entirely new-to-the-market innovations. Each category plays a strategic role in enhancing competitiveness, expanding market share, and extending product life cycles. Nevertheless, the successful management of these product categories requires effective coordination of managerial capabilities, innovation-oriented strategies, and organizational resources. In many cases, the failure of new products can be traced not to technical shortcomings, but to weak managerial systems and insufficient support for innovation during the development and commercialization stages.

Effective business management in manufacturing industries plays a vital role in coordinating resources, optimizing processes, and aligning strategic objectives with operational capabilities. Managerial practices related to planning, decision-making, coordination, and control significantly influence how efficiently firms transform innovative ideas into marketable products. At the same time, an innovation-oriented mindset—characterized by openness to new ideas, support for creativity, risk-taking, and continuous learning—has been widely recognized as a key driver of successful innovation outcomes (Ayinaddis, 2023).

Although prior studies have examined business management practices and innovation orientation separately, empirical evidence on their combined impact on new product performance remains limited, particularly in industrial and manufacturing contexts. Many manufacturing firms continue to struggle with resistance to change, rigid organizational structures, and inadequate innovation resource development, which collectively hinder effective new product development and commercialization.

The manufacturing sector plays a crucial role in economic growth, employment generation, and industrial development. In an era marked by rapid technological change, shortened product life cycles, and intensified global competition, the ability of manufacturing firms to introduce successful new products has become a key determinant of long-term survival and competitiveness (Boateng et al., 2025). From a managerial perspective, effective business management ensures efficient resource allocation and coordination of cross-functional activities, while innovation orientation fosters creativity and adaptability in responding to market and technological changes.

The significance of this study lies in its integrated examination of manufacturing business management and innovation orientation as key drivers of new product performance. By analyzing these factors simultaneously, the research addresses a gap in the existing literature, which often treats managerial practices and innovation-related orientations in isolation. This integrated perspective provides a more comprehensive understanding of how managerial capabilities and innovation-supportive cultures jointly influence organizational creativity, innovation resource development, and ultimately new product performance.

Therefore, this study aims to investigate the impact of manufacturing business management and innovation orientation on new product performance. By clarifying the role of different categories of new products and examining the underlying managerial and innovation

mechanisms, the study offers valuable insights for managers and policymakers seeking to enhance innovation capabilities, improve new product success rates, and achieve sustainable competitive advantage in manufacturing industries.

Innovation in the business of manufacturing industries, from the perspective of demand and the estimation of industrial customers, centers on the systematic identification, anticipation, and translation of customer needs into value-creating products and processes. Industrial customers typically demand high levels of reliability, customization, cost efficiency, and technological compatibility, which require manufacturers to go beyond reactive production and adopt data-driven demand forecasting, close customer collaboration, and continuous market sensing. By accurately estimating customer demand through market analytics, customer feedback, and long-term partnership signals, manufacturing firms can align innovation efforts with actual and future requirements of industrial buyers. This demand-oriented approach to innovation enables firms to reduce uncertainty in new product development, optimize resource allocation, shorten development cycles, and deliver solutions that enhance customer performance, thereby strengthening long-term relationships and improving competitive positioning in industrial markets.

2. Literature Review

New product performance remains a central concern in manufacturing industries, particularly under conditions of rapid technological change and increasing market uncertainty. Extensive research has demonstrated that managerial effectiveness and innovation orientation are among the most influential organizational factors shaping the success of new products.

Early foundational studies emphasize the importance of manufacturing business management in new product development. Cooper and Kleinschmidt (1995) and Wheelwright and Clark (1992) highlight that strategic planning, cross-functional coordination, and top management support significantly enhance new product outcomes. These managerial capabilities enable firms to integrate technical knowledge, market information, and production resources, thereby reducing development risks and improving time-to-market.

Innovation orientation has also been consistently identified as a critical driver of new product performance. Hurley and Hult (1998) conceptualize innovation orientation as an organizational culture that supports creativity, openness to new ideas, and willingness to take risks. Empirical studies by Calantone, Cavusgil, and Zhao (2002) and Hult, Hurley, and Knight (2004) demonstrate that innovation-oriented firms achieve higher levels of product differentiation, customer acceptance, and market success.

More recent research has increasingly focused on manufacturing contexts. Laforet (2016) argues that innovation orientation must be embedded within effective managerial systems to translate innovative ideas into successful products. Damanpour and Aravind (2012) further suggest that innovation outcomes depend on the alignment between managerial processes and organizational culture.

Recent studies published in 2024 and 2025 reinforce and extend these findings. For example, Zhang, Wang, and Li (2024) show that strategic manufacturing management practices—such as agile decision-making and process integration—positively affect new product performance, particularly when supported by a strong innovation orientation. Their findings suggest that managerial flexibility enhances the firm's ability to exploit innovative ideas in product development.

Similarly, Kumar and Singh (2024) find that innovation orientation mediates the relationship between management capabilities and new product success in manufacturing firms, indicating that managerial effectiveness alone is insufficient without a supportive

innovation mindset. In a 2025 study, Rodríguez and Chen (2025) report that manufacturing firms with both advanced management systems and high innovation orientation outperform competitors in terms of product quality, speed of commercialization, and market share.

Another recent contribution by Al-Hakimi et al. (2025) emphasizes that in technology-intensive manufacturing industries, innovation orientation strengthens the impact of managerial control and coordination on new product performance. Their results underline the interactive and complementary roles of management practices and innovation culture.

Despite the growing body of literature, many studies still examine manufacturing business management and innovation orientation independently. There remains limited empirical research that simultaneously investigates their combined effects on new product performance, especially in manufacturing industries operating in emerging and developing economies. This gap underscores the need for further research to provide a more integrated understanding of how managerial capabilities and innovation orientation jointly contribute to successful new product outcomes.

Despite the growing body of research on innovation management and new product development, the existing literature presents several limitations that necessitate further investigation. Prior studies have largely examined business management practices, market orientation, and innovation orientation as independent drivers of organizational performance, with limited attention to their combined and interactive effects within manufacturing contexts. Moreover, much of the empirical evidence is concentrated in service-based or high-technology industries, while traditional manufacturing sectors—characterized by capital intensity, complex production processes, and long development cycles—remain underexplored. From a theoretical perspective, there is a lack of integrative frameworks that explain how managerial capabilities translate innovation orientation into tangible outcomes such as innovation resource development, organizational creativity, and ultimately new product performance. Additionally, existing models often overlook the mediating mechanisms through which management and innovation orientations influence performance, particularly in industrial settings where demand uncertainty and customer-specific requirements are high. Consequently, the theoretical gap lies in the absence of a comprehensive, empirically tested model that simultaneously captures the roles of manufacturing business management and innovation orientation, as well as their indirect pathways, in explaining new product performance. Addressing this gap contributes to the advancement of innovation and management theories by offering a more holistic understanding of how strategic management and innovation-oriented behaviors jointly drive successful product outcomes in manufacturing industries.

3. Research Methodology

The statistical population is defined as all individuals, events, or objects that share at least one common characteristic and are the focus of a research study (Sekaran, 2001). The statistical population of this study consists of experts and professionals in the automotive industry. Given the unlimited size of the population, the sample size was determined using Cochran’s formula for an infinite population, resulting in a required sample of 382 respondents. A convenience sampling method was employed due to accessibility considerations. In this study, 400 questionnaires were distributed, and after the completion of the sampling process, 382 valid questionnaires were collected and selected in accordance with the Krejcie and Morgan table.

Data were collected using a structured questionnaire designed based on the research variables and relevant literature. The questionnaire was distributed among experts in the automotive industry and served as the primary data collection tool for this study.

To ensure the validity of the instrument, content validity was assessed through expert review and consultation with academic specialists in the field. Construct validity was examined using confirmatory factor analysis (CFA). Reliability of the questionnaire was evaluated using Cronbach's alpha coefficient and composite reliability (CR), with all values exceeding the acceptable threshold, indicating satisfactory internal consistency of the measurement scales.

Data analysis was conducted using Structural Equation Modeling (SEM) to examine the relationships among the research variables. The AMOS software package was employed to test the proposed research model and hypotheses. SEM was selected due to its capability to simultaneously analyze multiple relationships and assess both measurement and structural models.

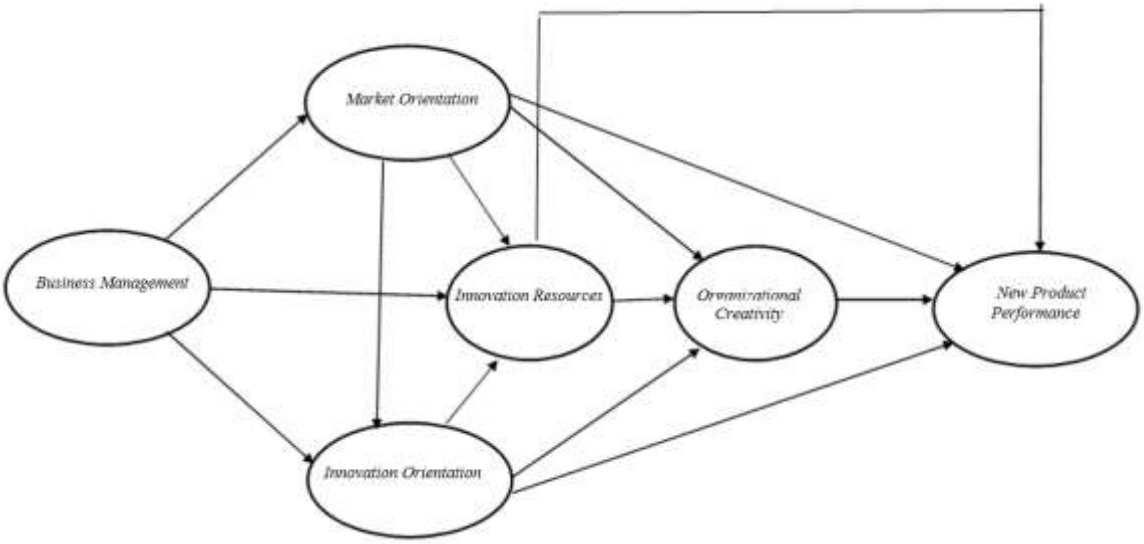

Figure 1. Conceptual Model of the Research, Adapted from Su et al. (2016)

4. Data Analysis

Figure 1 presents the measurement mod of the research variables under standardized estimation. The estimation results indicate that the model fit indices are satisfactory. According to the AMOS output, the calculated chi-square value (χ^2) is 362.394, and when divided by the degrees of freedom (df = 362), the resulting ratio is 2.399, which is below the recommended threshold of 3. This indicates an acceptable model fit.

The RMSEA value is 0.059, which is within the acceptable limit, as values below 0.08 indicate a good fit. In addition, the fit indices NFI, IFI, RFI, NNFI, and CFI are all above 0.90, confirming the adequacy of the model and demonstrating a good overall fit between the measurement model and the observed data.

The standardized factor loadings represent the extent to which each observed variable (questionnaire item) contributes to explaining the variance of its corresponding latent construct. In other words, factor loadings indicate the degree of correlation between each observed variable and the underlying latent factor. As shown in Figure 1, the factor loadings of all questionnaire items can be observed.

For example, the first item in the "Business Management" construct has a standardized factor loading of 0.82. This indicates that approximately 68% of the variance of the "Business Management" latent factor is explained by this item ($0.82^2 \approx 0.67$). The remaining 33% represents the measurement error, which corresponds to the portion of variance not explained by the item. Clearly, lower error variance implies higher coefficients of determination and stronger

correlations between the item and its related construct. The coefficient of determination ranges between 0 and 1, and values closer to 1 indicate greater explanatory power.

The next output, shown in Figure 2, presents the measurement model in terms of the significance of the estimated coefficients and parameters. All estimated path coefficients are statistically significant, as their critical ratio values are greater than ±1.96, indicating that the relationships among the observed variables and their corresponding latent constructs are statistically significant at the 95% confidence level.

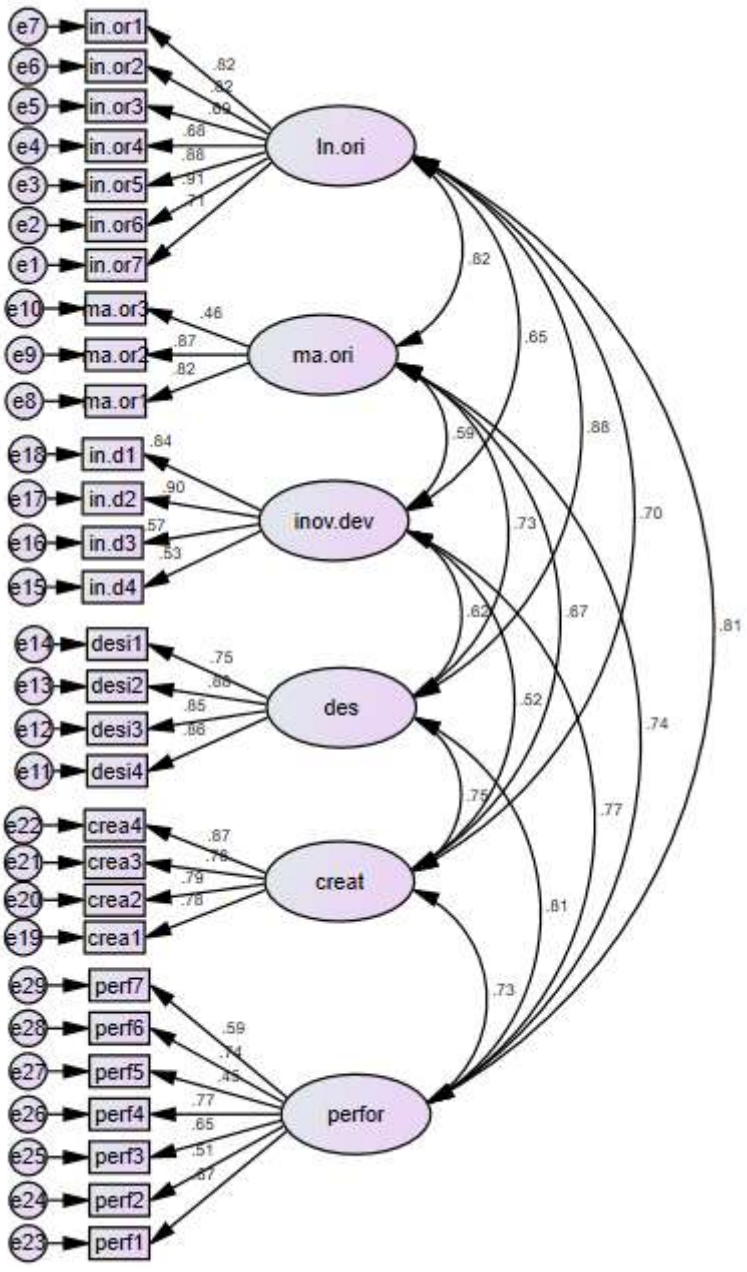

Figure 2. Structural Model of the Research in the Standardized Estimation Mode

Testing the Main Research Hypotheses Using Path Analysis with AMOS (Structural Model Section)

One of the most powerful and appropriate analytical approaches in behavioral science research is multivariate analysis. This is because the nature of such research topics is

inherently multivariate and cannot be adequately examined using bivariate methods, in which only one independent variable and one dependent variable are considered at a time. Therefore, in the present study, Structural Equation Modeling (SEM), and more specifically path analysis, was employed to confirm or reject the research hypotheses.

Path analysis (the structural model) is a technique that simultaneously illustrates the relationships among the research variables, including independent, mediating, and dependent variables. The main objective of path analysis is to identify causal (impact) relationships among the variables included in the conceptual model of the study. The structural model presented below illustrates the relationships among the factors influencing new product performance.

Figures 2 and 3 present the structural model under standardized estimation and the significance of the estimated path coefficients, respectively, based on the output of the AMOS statistical software. The confirmation or rejection of the hypotheses is determined by the significance results. In other words, a hypothesis is supported if the critical ratio value is greater than ±1.96.

Furthermore, the results of hypothesis testing using SEM indicate that the fitted structural model demonstrates an acceptable level of goodness of fit. The chi-square to degrees of freedom ratio ($\chi^2/df = 870.184 / 364 = 2.391$) is below the recommended threshold of 3, indicating a satisfactory fit. The RMSEA value of 0.059 also confirms the adequacy of the structural model fit. In other words, the observed data are largely consistent with the conceptual model of the research.

In addition, the fit indices NFI, IFI, RFI, NNFI, and CFI are all calculated to be above 0.90, which indicates a high level of model fit and further supports the appropriateness of the structural model for hypothesis testing.

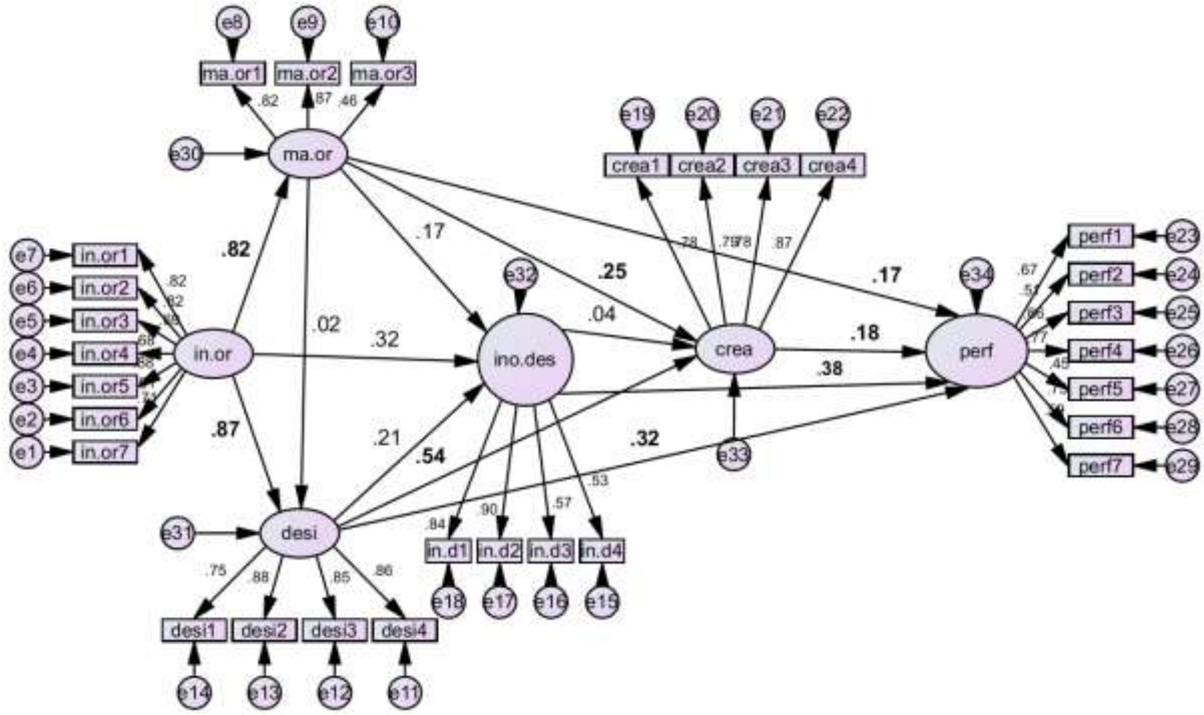

Figure 3. Structural Model in Standardized Estimation Mode

Table 1. Structural Model under Standardized Estimation and Significance

Hypotheses	Path Coefficient	t-value	Result
Business Management of Manufacturing Industries → Market Orientation	0.825	13.244	Supported
Business Management of Manufacturing Industries → Innovation Orientation	0.866	10.348	Supported
Market Orientation → Innovation Orientation	0.018	0.254	Not Supported
Design → Development of Innovation Resources	0.211	1.818	Not Supported
Market Orientation → Development of Innovation Resources	0.169	1.698	Not Supported
Innovation Orientation → Development of Innovation Resources	0.322	2.169	Supported
Market Orientation → Organizational Creativity	0.247	3.413	Supported
Design → Organizational Creativity	0.545	7.250	Supported
Development of Innovation Resources → Organizational Creativity	0.040	0.706	Not Supported
Market Orientation → New Product Performance	0.168	2.619	Supported
Organizational Creativity → New Product Performance	0.179	2.919	Supported
Design → New Product Performance	0.319	4.377	Supported
Development of Innovation Resources → New Product Performance	0.376	6.137	Supported

5. Conclusion

The findings of this study provide important insights into the relationships among business management, market orientation, innovation orientation, development of innovation resources, organizational creativity, and new product performance in the manufacturing industry. The results of the structural equation modeling indicate that effective business management in manufacturing industries has a strong and positive impact on both market orientation and innovation orientation. This highlights the critical role of managerial practices in creating a foundation for innovation and market responsiveness.

Market orientation, however, was found to have a limited direct impact on innovation orientation and the development of innovation resources, suggesting that market knowledge alone is not sufficient to drive innovation unless supported by managerial guidance and other organizational factors. Conversely, innovation orientation significantly affects the development of innovation resources, confirming that fostering an innovation-focused culture is essential for building the capabilities necessary to support new product development.

Organizational creativity is strongly influenced by both market orientation and design, while the development of innovation resources does not directly enhance creativity. This indicates that creativity in manufacturing organizations may depend more on strategic design and market insights than on resource accumulation alone.

Finally, new product performance is positively influenced by design, organizational creativity, innovation resources, and market orientation, demonstrating that a combination of

well-managed processes, creative capabilities, and effective resource utilization leads to superior product outcomes.

Overall, the study emphasizes the importance of integrated management and innovation strategies in the manufacturing sector. Firms seeking to improve their new product performance should focus on strengthening managerial practices, cultivating an innovation-oriented culture, and promoting creativity and effective resource development. These findings provide both theoretical contributions to the literature on innovation management and practical guidance for managers in manufacturing organizations aiming to enhance their competitive advantage through successful new product development.

The results of this study demonstrate that effective business management in manufacturing industries plays a pivotal role in enhancing innovation-related outcomes and improving new product performance. The findings indicate that strong managerial practices significantly influence both market orientation and innovation orientation, suggesting that firms with well-structured planning, coordination, and decision-making systems are better positioned to understand market needs and support innovative activities. Innovation orientation was found to have a positive effect on the development of innovation resources, highlighting the importance of managerial support in allocating financial, human, and technological resources to innovation initiatives. Furthermore, market orientation and design-related factors significantly enhance organizational creativity, which acts as a critical foundation for successful innovation in manufacturing firms. Most importantly, the development of innovation resources has a direct and substantial impact on new product performance, underscoring the role of strategic resource investment in achieving superior product outcomes.

Based on these findings, several practical suggestions can be offered to manufacturing firms. Managers should adopt integrated management systems that align strategic objectives with innovation goals and market demands. Emphasizing innovation-oriented leadership, encouraging cross-functional collaboration, and fostering a culture that supports creativity and controlled risk-taking can significantly enhance innovation capacity. Additionally, manufacturing firms should invest in advanced demand forecasting tools, customer involvement mechanisms, and design capabilities to better translate market insights into successful new products. Policymakers and industry leaders can also support manufacturing innovation by promoting training programs, innovation networks, and supportive infrastructures that strengthen managerial competencies and innovation resource development. Collectively, these actions can improve new product success rates, enhance competitiveness, and ensure sustainable growth in the manufacturing sector.

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Declaration of Competing Interest

The author has no conflicts of interest to declare that are relevant to the content of this article.

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