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Research on the Problems and Countermeasures of Building New Quality Talent Teams in Science and Technology-based Small and Medium-sized Enterprises (SMEs)

Manyu Li

Liaoning University of International Business and Economics, Dalian, Liaoning, 116052, China

Abstract: *New quality productivity, with innovation at its core, requires disruptive and original technologies to drive innovation. Shaping new quality productivity necessitates the development of a high-quality labor force, which ultimately depends on new quality talent. As the main force of economic development, science and technology-based SMEs must prioritize the construction of new quality talent teams. This study first defines the concept of new talent and outlines four key qualities. It then analyzes several challenges in the construction of new talent teams within science and technology-based SMEs, including insufficient attention to talent development, a lack of sufficient talent, an unreasonable talent structure, and the absence of clear career growth paths. The study proposes solutions to address these issues, such as increasing attention to new talent development, establishing an incentive system for new quality talents, improving the training system, and creating clear growth paths for talents. This study aims to improve the quality of new talent teams within science and technology-based SMEs and promote the innovative development of these enterprises.*

Keywords: *New quality talents; Talent team construction; Science and technology-based SMEs*

1. Connotation and Characteristics of New Quality Talents

New quality productivity is defined by the advancement of workers, labor means, labor objects, and their optimal combination. Within this framework, new quality talent is the most dynamic element and serves as a crucial driving force for both technological innovation and the innovation of labor means. New quality talent encompasses digital literacy, technological innovation capabilities, complex knowledge, and innovative thinking, all of which align with the characteristics of new quality productivity. In the process of cultivating and developing new quality productivity, science and technology-based SMEs are incorporating digital intelligence technologies into their talent team development practices. This integration is driven by the extensive use of advanced technologies such as big data, high-performance computing, and enhanced connectivity, which create favorable conditions for building new quality talent teams within enterprises[1].

New quality talents are innovative and versatile individuals who can drive the development of new quality productivity while embodying the technical qualities essential for the digital age. These talents possess innovative thinking and technological innovation capabilities, as well as the characteristics of composite talents. They are skilled in utilizing modern technologies and high-end technological equipment, have strong specialization and solid foundational education, and are both creators of disruptive and original technologies and leaders in optimizing industrial structures. Additionally, they are key figures in shaping new strategic industries [2]. As shown in Figure 1, new quality talents exhibit the following characteristics:

1.1 Strong character qualities and learning attributes

New quality talents are innovative individuals who align with the development of new quality productivity. Their personal conduct and character are fundamental standards for their success. These talents should be grounded in socialist core values, demonstrating high moral character and professionalism. They must uphold lofty ideals, practice national sentiment, and maintain a clear sense of mission amidst fierce market competition. They should remain focused, with the goal of advancing technology and improving the well-being of society. These individuals are committed to continuous

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efforts to foster technological progress and contribute to societal well-being. Furthermore, they should possess a strong sense of learning, adaptability, and a growth mindset to effectively navigate technological innovations and the transformation of enterprises.

1.2 Strong creative ability and practical wisdom

New quality talents should possess innovative thinking and the ability to transform scientific and technological achievements. They must be adept at breaking down disciplinary boundaries and applying knowledge and skills from various fields to solve complex technical problems [3]. In the context of science and technology-based enterprises, these talents can drive technological breakthroughs, optimize processes, and contribute to the high-quality development of the organization.

1.3 Digital literacy and information technology skills

In the era of the digital economy, which disrupts traditional production models and significantly enhances production efficiency and quality, new quality talents must possess the necessary digital literacy and informatization skills to lead social progress in this transformative era.

1.4 With a green sustainable development concept

In the process of technological development and innovation, new quality talents prioritize environmental friendliness as a guiding principle [4]. This approach is reflected in the production and operations of enterprises, where they implement green manufacturing practices and green management strategies. These talents emphasize the importance of sustainable development in driving the growth of enterprises.

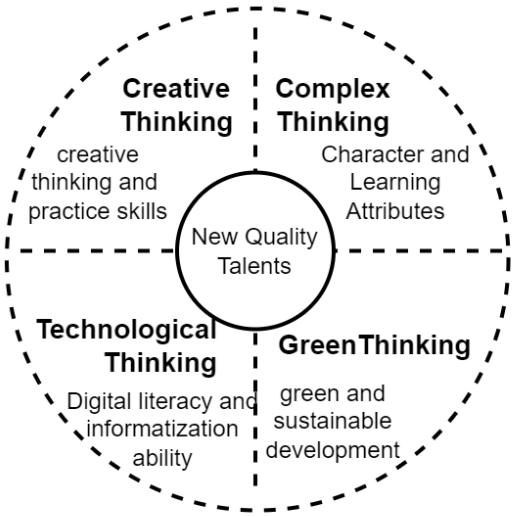

Figure 1: Trait analysis of new quality talent

2. The Necessity of Building New Quality Talent Teams for the Development of Science and Technology-based SMEs

Science and technology-based small and medium-sized enterprises (SMEs) play a crucial role in building economic power. Technological innovation is the primary driving force behind these enterprises, and new quality talent is the key resource for realizing this innovation. Therefore, it is essential to prioritize the development of new quality talent teams within science and technology-based SMEs [5]. Actively cultivating and enhancing the new quality of productive forces will help these enterprises strengthen scientific and technological innovation, ultimately leading to high-quality development. This process is illustrated in Figure 2.

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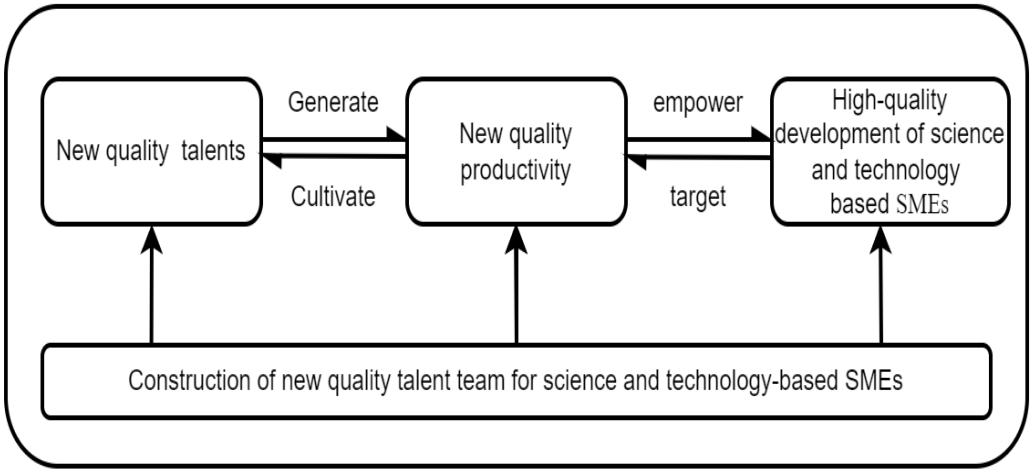

Figure 2: Mechanisms for building a new quality workforce for high-quality development of science and technology-based SMEs

3. Problems in Building a New Quality Talent Pool for Science and Technology-Based SMEs

As a crucial component of new quality productivity, new quality talent is an indispensable resource for science and technology-based SMEs. However, these enterprises face several challenges in building effective new quality talent teams. Only by establishing well-structured and high-quality talent teams can they fully leverage their innovation capabilities. The main issues are as follows:

3.1 Insufficient Awareness of Building a New Quality Workforce

Some managers of science and technology-based SMEs continue to rely on traditional human resource management models, overlooking the strategic function of human resource management. Even when they recognize the importance of new-quality talents, they often neglect the strategic value of building such teams. Moreover, these enterprises typically lack systematic and comprehensive planning for the development of their new-quality talent teams.

3.2 Insufficient Number of New Quality Personnel

The size of a talent team directly determines an enterprise's innovation capacity [6]. Despite the growing demand for new quality talents, the proportion of such talents relative to the total workforce remains low in many science and technology-based SMEs. This shortage is exacerbated by regional limitations in human resources, demographic changes, and talent migration. Consequently, the insufficient number of new talents has become a major obstacle to the rapid development of these enterprises.

3.3 Unreasonable Structure of the New Quality Personnel Team

The structure of the new quality talent team can be analyzed in terms of titles, specialties, and education. In terms of titles, intermediate-level professionals dominate, while there is a lack of high-level talent. In particular, there is a shortage of leading, top-tier, and innovative professionals. Regarding specialties, there is an insufficient number of talents in high-tech fields, mechanical design, and foreign trade. In terms of education, while a significant proportion of new quality talents hold a master's degree, there is a scarcity of those with higher degrees, especially those with a master's degree or above.

3.4 Unclear Growth Path for New Quality Talent

Science and technology-based SMEs often neglect career planning for new quality talents and fail to prioritize their training and growth. This neglect is partly due to concerns about development costs and the potential turnover of talent as they grow. Additionally, due to their relatively short

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establishment period and small scale, many science and technology-based SMEs lack experience and capability in human resources development and management. This gap results in insufficient management methods for guiding the growth of new quality talent, which in turn leads to instability within the talent team.

4. Paths for Building a New Quality Talent Team for Science and Technology-Based SMEs

4.1 Changing the Management Mindset and Strengthening Emphasis on Team Building

Managers of science and technology-based SMEs must first shift their mindset and recognize the importance of new quality talent team construction, as this is key to effective talent management [7]. In these enterprises, competition is ultimately a competition for talent, particularly for new talents. By building a talent service platform and establishing a database of new quality talents, enterprises can enhance the development of their talent teams. Additionally, strengthening the training of enterprise managers, encouraging top management to participate in government talent programs, and formulating strategies for talent team development will further reinforce the construction of high-quality talent teams.

4.2 Establishing a Talent Incentive System to Enhance the Attractiveness of Enterprises

Building on government talent introduction policies, science and technology-based SMEs need to establish effective talent attraction mechanisms. These mechanisms should create new talent training and incentive systems to ensure stability and continuity of government policies. SMEs should develop incentive policies that foster an environment conducive to independent innovation and talent development. Additionally, a comprehensive compensation system should be established to ensure that new talents receive competitive salaries, widening the pay gap between them and the rest of the workforce.

4.3 Improving the Talent Training System and Optimizing the Structure of New Quality Talents

The technology research and development efforts of science and technology-based SMEs highlight the importance of integrating staff training into daily management practices. New talents, who typically have a strong desire for self-improvement, can benefit from continuous training to develop their skills and abilities, thus contributing to the overall advantage of the enterprise. However, since the number of new talents with high qualifications and advanced degrees is relatively small, the training system should be strengthened, especially in technical areas. By raising the bar for training and unlocking the potential of these talents, enterprises can foster a stable, loyal talent pool and ensure sustainable development.

4.4 Establishing a New Quality Talent Growth Path to Support Career Development

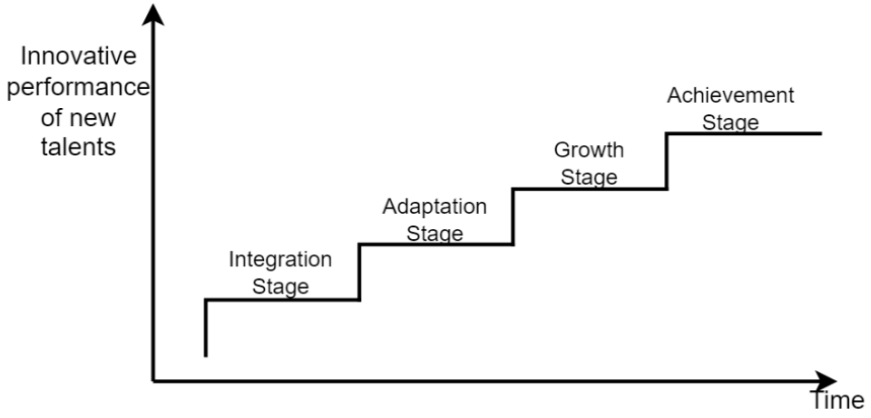

Figure 3: New Quality Talent Growth Path

In the process of building a new quality talent team, science and technology-based SMEs should create clear growth paths for these talents by outlining a four-stage development plan. This plan should

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provide a structured approach to career progression, including position sequencing, promotion mechanisms, job requirements, and service conditions. By helping new quality talents fully realize their potential and supporting their individual career development [8], these enterprises can ensure effective talent team building. The specific growth path involves four progressive stages: integration, adaptation, growth, and success. This structured approach ensures precise training at each stage, enhancing the overall impact of talent team development. This process is illustrated in Figure 3.

5. Summary

New quality talent is the primary force driving the formation of new quality productivity and serves as the core engine for the scientific and technological innovation of science and technology-based small and medium-sized enterprises (SMEs). Therefore, strengthening the construction of new quality talent teams in these enterprises is of paramount importance. In practice, however, science and technology-based SMEs face several challenges, including weak awareness of new quality talent team development, insufficient numbers of new quality talents, unreasonable team structures, and unclear growth pathways for talent. To address these issues, it is essential to shift management mindsets, prioritize the development of new quality talent teams, establish talent incentive systems, improve training frameworks, and support the career development of new quality talent. These measures will facilitate the construction of robust new quality talent teams, thereby enhancing the scientific and technological innovation capabilities of enterprises and promoting the high-quality development of science and technology-based SMEs.

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