The Development of Humanities and Social Sciences, 2026, 2(4), 25-44
https://doi.org/10.71204/n7b9d896

Research on Xi Jinping Thought on Scientific and Technological Innovation in the New Era

Hongzuo Liu [1, *]

[1] School of Marxism, Anhui University, Hefei 230601, China

***Corresponding Author**
Hongzuo Liu

1241220931@qq.com

Received: 20 July 2026 / Accepted: 15 August 2026 / Published online: 18 August 2026

Abstract

This article conducts a systematic study centered around Xi Jinping's thought on scientific and technological innovation in the new era. Firstly, it explores the methodology for studying Xi Jinping's thought on scientific and technological innovation in the new era, emphasizing the principle of "prioritizing intra-party consensus", adhering to the principle of "seeking truth from facts and respecting practice", and highlighting the necessity of "aligning with the contemporary era background". Secondly, this article delves into the essence of Xi Jinping's thought on scientific and technological innovation in the new era. Starting from the new development philosophy of "innovation, coordination, green development, openness, and sharing", and based on the important assertion that "innovation is the primary driving force for development", it emphasizes the significance of scientific and technological innovation in the context of global competition and economic transformation. Simultaneously, this article elucidates the theoretical proposition of "steadfastly following the path of independent innovation with Chinese characteristics", explicitly stating that "talent is the foundation of innovation, and innovation-driven development is essentially talent-driven", highlighting the decisive role of talent in scientific and technological innovation. Finally, this article systematically discusses the realistic path of the methodology for the implementation of this idea, and elaborates in detail on how to implement Xi Jinping's Thought on Science and Technology Innovation in the New Era. Based on this, this article aims to provide theoretical basis and policy suggestions for the construction of China's scientific and technological innovation system in the new era, and promote the further high-quality development and sustainable progress of China's scientific and technological cause.

Keywords: The New Era; Scientific and Technological Innovation Thought; New Development Concept

1. Introduction

Currently, the profound transformations unseen in a century across the world are accelerating their evolution. A new round of scientific and technological revolution and industrial transformation is reshaping the global innovation landscape and economic structure, with scientific and technological prowess emerging as the core competitiveness in the strategic rivalry among major powers and a critical variable determining a nation's rise or decline. Meanwhile, China is at a pivotal stage of comprehensively advancing the great rejuvenation of the Chinese nation through Chinese path to modernization. The traditional development pattern driven by conventional factors has become unsustainable. Addressing the "bottleneck" challenges in critical core technologies and fostering the development of new quality productive forces have become urgent requirements for achieving high-quality development. Against this historical backdrop, the strategic significance of scientific and technological innovation has been elevated to an unprecedented level, and Xi Jinping's Thought on Scientific and Technological Innovation in the New Era stands as both a theoretical crystallization and an action guide for addressing this historical juncture.

Xi Jinping's Thought on Scientific and Technological Innovation in the New Era is grounded in the era characterized by the interweaving of "two overarching strategies" (the great rejuvenation of the Chinese nation on all fronts and the profound changes unseen in the world in a century). It creatively integrates the Marxist perspective on science and technology with China's practical endeavors in scientific and technological innovation, yielding a series of original propositions encompassing the comprehensive leadership of the Party, self-reliance and strength in science and technology, and the integration of innovation chains, industrial chains, and talent chains, among others. From the comprehensive completion of the China Space Station to the commercial operation of the C919 aircraft, from the global networking of the BeiDou Navigation Satellite System to the global leadership in lithium battery technology, this thought has guided China's scientific and technological endeavors in achieving a historic transformation from quantitative accumulation to qualitative leap. It not only profoundly elucidates the core position of scientific and technological innovation within the overall national development framework but also systematically charts the path and methods for building a world leader in science and technology, providing fundamental guidelines for overcoming institutional barriers in science and technology and stimulating the vitality of innovation entities. An in-depth study of this thought can not only help us clarify the theoretical logic and practical mechanisms of scientific and technological innovation in the new era, enrich the contemporary connotations of Marxist scientific and technological theory but offer solid theoretical underpinnings and practical insights for China to seize the initiative in global innovation competition and underpin Chinese path to modernization with scientific and technological modernization as well. It holds significant theoretical value and practical implications for promoting high-level self-reliance and strength in science and technology and realizing the great rejuvenation of the Chinese nation.

2. The Methodology for Studying Xi Jinping's Thought on Scientific and Technological Innovation in the New Era

Xi Jinping's Thought on Scientific and Technological Innovation in the New Era constitutes a vital component of China's contemporary theoretical framework for the development of the scientific and technological sector, with its scientific connotations and practical guiding significance manifesting across multiple dimensions (Under the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era: Focusing on the major task of scientific and technological innovation, 2024). To truly master this thought, it is imperative to engage in systematic study and practical exploration grounded in a scientific methodology. The methodology for studying Xi Jinping's Thought on Scientific and Technological Innovation in the New Era can be primarily expounded from three aspects: (1) adhering to the principle of "giving priority to authoritative conclusions within the Party"; (2) upholding the approach of "seeking truth from facts and respecting practice"; (3) requiring the alignment of theory with the contemporary context of the times.

2.1. Giving Priority to Authoritative Conclusions within the Party: Ensuring the Authority and Correctness of Theoretical Guidance

"Giving Priority to Authoritative Conclusions within the Party" signifies that when studying and implementing Xi Jinping's Thought on Scientific and Technological Innovation in the New Era, we must primarily rely on the definitive conclusions established within the Party. This principle encompasses the following connotations: Firstly, authoritative conclusions within the Party represent intellectual achievements that have undergone rigorous testing through long-term practice, thorough deliberation, and have garnered consensus across the entire Party (Wu et al., 2024). All major policy decisions and theoretical innovations of the Party have been subjected to repeated discussions and practical validations by the collective wisdom of the Party's Central Committee, thereby forming a systematic and rigorous theoretical guiding framework. Meanwhile, the Party's decisions and official documents embody the fundamental guiding ideology for China's scientific and technological innovation. Therefore, when studying and implementing Xi Jinping's Thought on Scientific and Technological Innovation in the New Era, it is imperative to take authoritative conclusions within the Party as the primary reference, ensuring that all theoretical discussions and practical explorations are firmly grounded in a solid theoretical foundation.

Secondly, "giving priority to authoritative conclusions within the Party" necessitates that we correctly handle the relationship between theoretical inheritance and innovation (Chen, 2024). Xi Jinping's Thought on Scientific and Technological Innovation in the New Era not only inherits the scientific and technological theories of previous generations of the Party's central leadership collectives but also represents a theoretical elevation based on the practices of the new era. During this process, it is essential to adhere to the principle of neither negating the wisdom of our predecessors nor ceasing to enrich and develop it through practice (Putin, 2018). Only under the guidance of the Party's authoritative conclusions can we ensure that the theory of scientific and technological innovation possesses both continuity and contemporary characteristics, avoiding the pitfalls of blindly adhering to outdated experiences while preserving the Party's theoretical

traditions. This approach ensures that theoretical achievements truly embody a comprehensive and forward-looking perspective.

Finally, "giving priority to authoritative conclusions within the Party" also highlights the organizational and disciplinary nature of theoretical learning. The Party's political life is characterized by a high degree of organization and strict discipline, and the study of any scientific and technological innovation theory must be conducted under the leadership of the Party to prevent theoretical deviations caused by subjective assumptions or external interferences. Through organizing thematic study sessions, concentrated discussions, and exchanges of experiences, it ensures that every scientific and technological worker can accurately grasp the essence and practical requirements of Xi Jinping's Thought on Scientific and Technological Innovation in the New Era, thereby consciously implementing it in their own work posts. It is precisely this rigorous organizational guarantee and disciplinary constraint that enables the theory and practice of scientific and technological innovation to truly stay at the forefront of the times.

2.2. Seeking Truth from Facts and Respecting Practice: Laying a Solid Theoretical and Practical Foundation

As a pivotal principle of Marxist epistemology, seeking truth from facts has consistently held a position of paramount importance in China's scientific and technological endeavors. Xi Jinping's Thought on Scientific and Technological Innovation in the New Era represents a significant theoretical achievement distilled from extensive practical experiences. Its essence lies in grasping the dynamics of practical changes, summarizing the experience and lessons learned, substantiating assertions with facts, and verifying the correctness of theories through practice.

Firstly, respecting practice constitutes an inevitable requirement for the development of theoretical frameworks in scientific and technological innovation. Throughout the process of scientific and technological advancement since China's reform and opening-up, a wealth of practical experiences and successful cases have been accumulated. These practices not only provide invaluable material for theoretical formulation but also offer clear directions for testing and improving theories. President Xi Jinping has repeatedly emphasized that scientific and technological innovation should not remain confined to theoretical discourses but must delve into real-world contexts and grassroots levels to identify, analyze, and resolve issues arising from practical work. Only through a close integration of theory with practice can the ideological framework of scientific and technological innovation truly possess the capacity to guide real-world endeavors (Africa-China, 2018). Through repeated validation in the context of major scientific and technological projects, breakthroughs in key technologies, and industrial upgrading practices, the methodology of seeking truth from facts enables continuous refinement and enhancement of theories, fostering a virtuous cycle of self-renewal and self-evolution.

Secondly, in order to seek truth from facts, we should free ourselves from the influence of formalism and one-sidedness during the learning process. In the study and practice of scientific and technological innovation, there is a tendency to deviate from reality and engage in mere theoretical discussions. To counter this, it is important to base our learning on realistic investigations and factual foundations, thoroughly examine cutting-edge developments and

practical achievements across various fields, and emphasize the analysis and summarization of practical cases. By starting from real-world conditions, we could avoid subjective assumptions and theoretical vacuity, thereby endowing scientific and technological innovation thought with greater pertinence and practicality. This process provides objective support for theory and propels its continuous deepening and refinement, driving China's scientific and technological innovation system to new heights.

Finally, respecting practice is also reflected in the rethinking and summarization of failure experiences. Setbacks and failures are inevitable in any process of scientific and technological innovation, but these failures constitute vital resources for theoretical revision and innovation (Xi, 2018). Xi Jinping's Thought on Scientific and Technological Innovation in the New Era advocates learning lessons from failures and continuously exploring new paths through summarization, thereby forming a scientific and incremental approach to innovation. This process not only underscores a high regard for practical experience but also demonstrates a problem-oriented approach, an adherence to systemic thinking, and a spirit of continuous self-revolution. Only by fully recognizing the uncertainties and complexities inherent in practice can we identify the most suitable model for scientific and technological innovation tailored to China's national conditions through ongoing trial and error and reflection.

2.3. In Line with the Contemporary Context: Closely Integrating with the Current International and Domestic Situations to Reflect Developmental Needs

The new era is characterized by increasingly fierce global competition in science and technology, as well as the continuous deepening of scientific and technological revolutions and industrial transformations. In such an era context, Xi Jinping's Thought on Scientific and Technological Innovation in the New Era has distinct epochal characteristics and practical significance. To study this thought, it is necessary to closely align with the current international and domestic contexts, reflect the developmental needs of the times, and keep pace with the times.

First of all, this era necessitates that we possess a global perspective and precisely grasp the developmental trends in global science and technology. With the rapid development of technologies such as artificial intelligence, big data, and cloud computing, the landscape of global scientific and technological competition is undergoing profound transformations. President Xi Jinping has repeatedly pointed out that China's scientific and technological innovation should position itself at the forefront of global scientific and technological advancements and actively engage in international competition and cooperation. So, studying this thought requires not only drawing on advanced international experiences but also formulating science and technology strategies tailored to China's national conditions and developmental realities. To establish a scientific and technological innovation system with distinct Chinese characteristics, we must fully absorb advanced international concepts and integrating them with the practical needs of domestic economic and social development. In this way, it can enhance China's scientific and technological strength, as well as contribute Chinese wisdom and solutions to global scientific and technological governance.

Plus, aligning with the contemporary era also demands that theories must respond to the

practical imperatives of economic transformation and industrial upgrading. Currently, China is at a critical juncture transitioning from traditional modes of development to high-quality growth, with scientific and technological innovation entrusted with an unprecedentedly significant mission. From promoting the transformation of new and old growth drivers and optimizing the industrial structure, to achieving the comprehensive transformation and upgrading of the economy and society, all of these are inseparable from the support of scientific and technological innovation. Xi Jinping's Thought on Scientific and Technological Innovation in the New Era was proposed precisely against this backdrop, with its connotations fully embodying the overarching requirements of accelerating the translation of scientific and technological achievements, driving industrial upgrading, and realizing high-quality economic development. When studying this thought, it is essential to profoundly recognize that scientific and technological innovation not only serves as an engine for economic growth but also constitutes a crucial pathway for addressing a range of social issues. By grasping this developmental trend, we will seize the initiative and gain a competitive edge amidst the tides of the new era.

Last but not least, aligning with the contemporary era is also manifested in the organic integration of cultural confidence and institutional advantages. The unique strengths of China's socialist system provide solid support for scientific and technological innovation, and the new era represents a pivotal period for promoting the advantages of the socialist system with Chinese characteristics and driving institutional and mechanism innovation. President Xi Jinping has underscored the necessity of fully leveraging the distinctive advantage of the socialist system in pooling resources to accomplish major undertakings, thereby elevating scientific and technological innovation to a position of even greater importance (Xi, 2018). Evidently, studying and implementing Xi Jinping's Thought on Scientific and Technological Innovation in the New Era necessitates not only grounding in the realms of technological and economic development but also integrating it within the overarching framework of cultural confidence and institutional advantages, achieving an organic unity of theory, practice, and institutions. Only in this manner can we truly grasp the essence of scientific and technological innovation and propel China's scientific and technological endeavors toward leapfrog development.

In conclusion, the methodology for studying and implementing Xi Jinping's Thought on Scientific and Technological Innovation in the New Era primarily encompasses three aspects above. These elements complement and reinforce one another, collectively forming the theoretical framework and practical pathway for the study of scientific and technological innovation thought. Under the unified leadership of the Party and through solidly promoting the integration of theory with practice, we can continuously deepen our understanding of the connotations of Xi Jinping's Thought on Scientific and Technological Innovation in the New Era, thus providing robust theoretical support and practical guidance for China's future scientific and technological innovation. By continuously enhancing theoretical study and practical exploration, we will undoubtedly be better equipped to comprehend and implement Xi Jinping's Thought on Scientific and Technological Innovation in the New Era, contributing wisdom and strength to the realization of a scientific and technological powerhouse and national rejuvenation.

3. The Connotations of Xi Jinping's Thought on Scientific and Technological Innovation in the New Era

Xi Jinping's Thought on Scientific and Technological Innovation in the New Era was formulated on the basis of summarizing China's practical experiences and theoretical achievements in scientific and technological innovation since the reform and opening-up period. It represents a brand-new theoretical expression amidst the accelerated global scientific and technological transformation and China's entry into a new stage of economic and social development (Guo, 2017). The connotations of this thought are primarily manifested in four aspects: First, it emphasizes the new development philosophy of "innovation, coordination, greenness, openness, and sharing", in line with "innovation being the primary driving force leading development." Second, it advocates "unswervingly following the path of independent innovation with Chinese characteristics." Third, it asserts that "talent is the foundation of innovation, and innovation-driven development is essentially talent-driven."

3.1. "Innovation, Coordination, Greenness, Openness, and Sharing": Guiding High-Quality Scientific and Technological Development with New Development Concepts

"Innovation, coordination, greenness, openness, and sharing" constitute the most representative and strategically oriented overarching guideline within Xi Jinping's Thought on Scientific and Technological Innovation in the New Era. This development concepts not only systematically summarizes the successful experiences accumulated during China's economic and social development but also proposed based on a profound understanding of the national modernization needs amidst the backdrop of globalization and deep technological integration. Formed on the basis of domestic and international development experiences and significant practices, this concepts possesses both theoretical depth and practical guiding significance.

Firstly, innovation serves as the primary driving force behind all progress. The assertion that "innovation is the foremost driving force leading development" is a core proposition within Xi Jinping's Thought on Scientific and Technological Innovation in the New Era and represents a fundamental thread running through China's scientific and technological development theory. Historically, China's scientific and technological policies have evolved from recognizing "science and technology as the primary productive force" to emphasizing "innovation as the foremost driving force leading development," continuously reflecting the deepening of theoretical understanding and the accumulation of practical experiences. By placing "innovation" at the forefront, it underscores that scientific and technological innovation is the fundamental impetus for national competitiveness and sustainable development. Whether viewed from the perspective of the new technological revolution or the practical needs of economic structural transformation and upgrading, innovation is regarded as a crucial breakthrough for overcoming the limitations of traditional development models and breaking free from resource constraints. Only by making innovation the fundamental driving force for economic and social development can high-quality development and comprehensive upgrading be achieved (Putin, 2019).

From the practical perspective, a series of significant breakthroughs China has achieved in fields such as next-generation information technology, biotechnology, and artificial intelligence

vividly embody the proposition that "innovation is the foremost driving force leading development." With the widespread application of new technologies like "Internet Plus," big data, and cloud computing, traditional industries are undergoing profound transformations (Li, 2025). Through independent research and technological innovation, some of China's industries have gradually transitioned from following to keeping pace with, and even leading, their global counterparts. These practical achievements not only demonstrate the decisive role of innovation in driving economic development but also provide robust support for further advancing the innovation-driven development strategy.

In addition, innovation exhibits strong systemic and radiating effects. It encompasses not only technological and product innovation but also extends to institutional mechanisms, management models, cultural concepts, and various other dimensions. Only by establishing a comprehensive, multi-dimensional innovation system can individual technological advancements be transformed into holistic societal progress. It is against this backdrop that Xi Jinping's Thought on Scientific and Technological Innovation in the New Era was proposed, calling for government of all levels, enterprises, universities, and research institutions to form a concerted effort and jointly build an open, collaborative, and complementary innovation network. Through the continuous enhancement of innovation capabilities across society, China's economy can achieve a fundamental transformation from quantitative expansion to qualitative improvement.

Moreover, the stimulation of innovation momentum cannot be separated from effective institutional arrangements and policy guarantees. In recent years, China has continuously deepened its reform of the science and technology system, constructing an innovation system centered on enterprises, guided by the market, and featuring deep integration among industry, academia, and research. This has created a favorable policy environment for technological breakthroughs and industrial upgrading. Xi Jinping's Thought on Scientific and Technological Innovation in the New Era emphasizes the need to seek breakthroughs through reform and to stimulate the vitality of scientific and technological innovation through institutional innovation, thereby making innovation truly the foremost driving force leading development. Only by continuously improving mechanisms for scientific research investment, technology transfer, and talent incentives can China maintain a dominant position in the fierce international competition in science and technology.

Furthermore, coordinated development necessitates achieving balance across multiple dimensions, including regional economies, urban-rural development, and industrial structures. Coordinated development is not only reflected in the rational allocation of resources but also in industrial layout, the sharing of technological achievements, and institutional arrangements that promote social equity and justice. By orchestrating development among urban and rural areas, regions, and sectors, scientific and technological innovation can truly benefit society as a whole and realize common prosperity.

Thirdly, the concept of green development underscores the close integration of environmental protection and sustainable development. In the face of increasingly severe global challenges such as climate change and environmental pollution, green development has become an inevitable choice for countries pursuing long-term interests. Xi Jinping's Thought on Scientific and

Technological Innovation in the New Era mandates that, while pursuing rapid economic growth, emphasis must also be placed on ecological civilization construction, with environmental protection regarded as a crucial component of scientific and technological innovation. Only by establishing a green and low-carbon technological system can countries maintain an invincible position in future international competition.

Meanwhile, openness represents China's strategic stance of actively integrating into the international scientific and technological innovation system in the era of globalization. Openness not only means the introduction of advanced foreign technologies and management expertise but also embodies the proactive promotion of international scientific and technological cooperation and exchanges, as well as the establishment of a mutually beneficial global innovation network. By this way, China can both learn from advanced foreign technologies and build upon its independent research and development capabilities, thereby forming a uniquely distinctive innovation system. Open development provides China's scientific and technological innovation with a broad international perspective and development space, helping to overcome bottleneck issues in domestic technological advancement.

Lastly, the concept of sharing fully reflects that the ultimate goal of scientific and technological innovation lies in enhancing people's well-being. Only when scientific and technological achievements truly benefit the broad masses of the people can their greatest social value be realized. Xi Jinping's Thought on Scientific and Technological Innovation in the New Era emphasizes that it is necessary to establish a fair and reasonable distribution mechanism so that the entire society can share the benefits brought about by technological progress (F, 2019). Sharing contains not only the distribution of economic benefits but also the openness and dissemination of scientific and technological knowledge, resources, and information, thereby fostering a favorable atmosphere for innovation among the entire populace.

In conclusion, the new development concepts of "innovation, coordination, greenness, openness, and sharing" represents a scientific summary of China's past development experiences and serves as a crucial strategic guide for addressing development challenges in the new era while looking towards the future. This concepts possesses both theoretical elevation and practical depth, providing fundamental guidance for China to build a modern economic system and advance towards becoming a global leader in science and technology.

3.2. Unwaveringly Follow the Path of Independent Innovation with Chinese Characteristics

In the context of increasingly fierce international competition in science and technology today, pursuing the path of independent innovation has become an inevitable choice for safeguarding national security and enhancing comprehensive national strength. Xi Jinping's Thought on Scientific and Technological Innovation in the New Era explicitly emphasizes the necessity to "unwaveringly follow the path of independent innovation with Chinese characteristics." This proposition not only represents the inheritance of China's past experiences in scientific and technological development but also signifies a theoretical elevation that profoundly summarizes China's scientific and technological strategy under new circumstances.

Firstly, the proposition of the path of independent innovation with Chinese characteristics

originates from China's unique national conditions and institutional advantages (Clemens, 2020). As a developing country with too much people, China has made substantial investments in the field of science and technology over an extended period. However, notable gaps still persist in core technologies and critical sectors. It is precisely against this backdrop that President Xi Jinping has underscored the imperative of pursuing a path of independent innovation. The concept of independent innovation does not represent a simple antithesis to international integration; rather, it entails fully absorbing advanced foreign experiences while grounding efforts in China's own realities and leveraging the unique advantage of China's socialist system, which enables the concentration of resources to accomplish significant undertakings, thereby achieving independent research, development, and breakthroughs in scientific and technological achievements. This proposition is formulated based on a profound analysis of significant practical changes within China and the international landscape of science and technology, and its connotations embody the fundamental requirement of integrating inheritance with innovation.

Secondly, following the path of independent innovation with Chinese characteristics necessitates a comprehensive recognition of its vital strategic significance. Faced with the real-world challenges of international technological blockades, trade frictions, and intensifying scientific and technological competition, independent innovation has emerged as a pivotal measure for safeguarding national security and enhancing comprehensive national strength. Only by relying on independent research and development and technological accumulation can breakthroughs be achieved in core technology domains, thereby breaking foreign technological monopolies and ensuring the security of the national economy and defense. During this process, it is imperative for governments, enterprises, and research institutions to form a synergistic force, driving collaborative innovation across the entire chain, from basic research to applied development and from technological breakthroughs to the commercialization of research findings. By constructing an innovation system characterized by enterprises as the mainstay, market orientation, and close integration of industry, academia, and research, China can gradually discover a development path aligned with its own national conditions, achieving a transformation from "following" to "running alongside" and eventually to "leading" in the global technological landscape.

Thirdly, following the path of independent innovation with Chinese characteristics also requires us to fully leverage our country's unique institutional advantages. The characteristic of China's socialist system, which enables the concentration of resources to accomplish major undertakings, provides distinctive conditions for large-scale resource integration and strategic technological breakthroughs. In terms of major national projects and pivotal technological advancements, China has been able to rally its superior forces to accelerate research and development, achieving a series of globally renowned scientific and technological accomplishments, such as the "Two Bombs, One Satellite" program, high-speed railways, and 5G communication technologies. These successful experiences fully demonstrate that only by persisting in independent innovation and relying on the country's overall strategic planning and policy support can we seize the initiative in the fierce international competition. It is against this backdrop that Xi Jinping's Thought on Scientific and Technological Innovation in the New Era

was proposed, emphasizing the unwavering commitment to the path of independent innovation, fully harnessing the country's unique advantages in resource allocation and policy formulation, and providing robust support for scientific and technological development.

In addition, the path of independent innovation with Chinese characteristics also emphasizes innovation through inheritance. Historical experiences demonstrate that China's scientific and technological advancement necessitates both inheriting the successful experiences of predecessors and continuously adapting and innovating in response to new circumstances. President Xi Jinping has reiterated on multiple occasions the importance of adhering to independent innovation while concurrently focusing on absorbing advanced foreign technologies and managerial expertise, thereby fostering a technological innovation model with distinctive Chinese characteristics. This "two-way interaction" not only enhances China's capacity for independent innovation but also facilitates the transformation of scientific and technological achievements into tangible productive forces, realizing high-quality economic and social development.

Finally, unwaveringly follow the path of independent innovation with Chinese characteristics also requires us to set an exemplary model of independent innovation in global scientific and technological governance. Currently, international competition in science and technology has entered a new phase, with countries formulating strategic policies for scientific and technological innovation. In this process, China must demonstrate its responsibility and wisdom as a major nation, not only achieving technological breakthroughs but also developing unique theoretical insights to contribute Chinese solutions to global scientific and technological advancement. By continuously strengthening the capacity for independent innovation, China will inevitably gain greater voice and initiative in global scientific and technological competition, thereby promoting the establishment of a more fair and reasonable new international order for science and technology.

In summary, the proposition of "unwaveringly follow the path of independent innovation with Chinese characteristics" serves as both a scientific summation of China's long-term practices in scientific and technological development and an inevitable requirement for the country's strategic choices in science and technology in the new era. Only by relying on independent innovation, grounding national conditions, and integrating advantages, can China continuously break through bottlenecks in core technologies, safeguard national security, and achieve sustained and healthy economic and social development.

3.3. Talent is the foundation of innovation, and innovation-driven development is essentially talent-driven

In the overall process of scientific and technological innovation, talent has consistently been regarded as the primary resource and fundamental guarantee. Xi Jinping's Thought on Scientific and Technological Innovation in the New Era explicitly posits that "talent is the foundation of innovation, and innovation-driven development is essentially talent-driven." This proposition reflects China's profound emphasis on talent strategy and unveils the fundamental impetus underlying the intrinsic development of scientific and technological innovation. Scientific and technological innovation necessitates both robust research and development capabilities and a

high-caliber, well-structured talent pool.

Firstly, from a theoretical perspective, talent constitutes the most critical production factor in the knowledge-based economy and the information age. While material resources and capital remain significant in the traditional sense, in the context of modern scientific and technological competition, the core of innovative capacity lies in intellectual capital and human resources. President Xi Jinping has repeatedly emphasized that talent is the fundamental guarantee for achieving scientific and technological breakthroughs and national prosperity. By cultivating and attracting high-caliber scientific and technological talent, China can not only enhance its independent innovation capabilities in both basic research and applied development but also facilitate the effective implementation of various scientific and technological policies, thereby fostering a robust innovation ecosystem (Ren, 2025). Only by possessing a workforce with international competitiveness can China ensure continuous substantive progress in its innovation strategies and technological breakthroughs.

Secondly, the role of talent is not merely confined to the research and development phase of scientific projects but permeates every link, including the transformation of technological achievements, industrial upgrading, and market application. The conversion of scientific and technological achievements into tangible productive forces hinges on the presence of technically proficient and innovatively spirited personnel. Against the backdrop of increasingly fierce global competition in science and technology, China's breakthroughs in fields such as artificial intelligence, quantum information, and biotechnology have been achieved precisely through the wisdom and efforts of a large cohort of top-tier talents. It is for this reason that Xi Jinping's Thought on Scientific and Technological Innovation in the New Era posits "talent as the foundation of innovation" as a fundamental proposition, fundamentally underscoring the significance of talent cultivation and recruitment.

Thirdly, the proposition that "innovation-driven development is essentially talent-driven" also unveils a profound underlying logic: the driving force behind scientific and technological innovation lies not only in funding, equipment, and institutional frameworks but, more fundamentally, in the intellect and creativity of talent. Only by establishing an efficient incentive mechanism for talent and fostering an open and inclusive environment for talent development can the full innovative potential of society be unleashed. In this regard, China has, in recent years, continuously refined its mechanisms for evaluating, incentivizing, and facilitating the mobility of scientific and technological talent, providing a favorable platform for talent growth through policy preferences and resource allocation. President Xi Jinping has emphasized the need to cultivate a contingent of compound talents proficient in both technology and management, enabling scientific and technological innovation to genuinely serve as a sustained impetus for economic and social development.

Fourthly, the talent strategy encompasses multiple dimensions, including higher education, vocational training, and international exchanges. To achieve "innovation driven by talent," it is essential to strengthen basic research within universities and research institutions, and prioritize the cultivation of skilled talent within enterprises and the market. By deepening industry-university-research collaboration, establishing international platforms for talent exchange, and

optimizing policies for talent recruitment, China is continuously improving its ecosystem for scientific and technological talent, striving to build an innovative team that possesses both an international perspective and a strong foundation in local practice. Such initiatives not only help narrow the gap with internationally advanced standards but also provide a solid talent foundation for realizing China's self-reliance and self-strengthening in science and technology.

Fifthly, the implementation of the talent strategy also need robust support from cultural confidence and institutional guarantees. China boasts a profound cultural heritage and unique advantages inherent in its socialist system, which provide a distinctive nurturing ground for the cultivation of scientific and technological talent and innovation. Xi Jinping's Thought on Scientific and Technological Innovation in the New Era underscores the importance of fostering innovative spirit and practical abilities as integral components of talent development, while promoting the formation of a favorable social atmosphere that respects knowledge and upholds innovation. Only within such a cultural milieu can scientific and technological talent fully leverage their subjective initiative, continuously achieve self-breakthroughs and surpass previous limits, thereby injecting an inexhaustible impetus into the national innovation system.

In conclusion, the proposition that "talent is the foundation of innovation, and innovation-driven development is essentially talent-driven" not only elucidates the essence of scientific and technological innovation but also provides strategic guidance for China to achieve leapfrog advancements in science and technology in the new era. By continuously optimizing talent development mechanisms, constructing open and inclusive talent platforms, and fostering a favorable innovation culture, China is poised to establish a competitive edge centered on talent in the global scientific and technological competition, thereby laying a solid foundation for realizing the goals of becoming a scientific and technological powerhouse and achieving national rejuvenation. The profound connotations of Xi Jinping's Thought on Scientific and Technological Innovation in the New E ra reveal the strategic position and practical significance of scientific and technological innovation in China's development in this new era. This thought not only inherits and develops China's existing notions of scientific and technological innovation but also represents a significant theoretical achievement that comprehensively and systematically plans for scientific and technological innovation under new historical conditions.

4. The Methodology for Implementing Xi Jinping's Thought on Scientific and Technological Innovation in the New Era

Xi Jinping's Thought on Scientific and Technological Innovation in the New Era serves as a theoretical beacon guiding scientific and technological endeavors, and should take root and flourishing in practice. Implementing this thought requires both theoretical acumen and political steadfastness, as well as the formation of a synergistic force across various facets, including institutional mechanisms, policy measures, industrial development, and talent cultivation (Wang, 2025).

4.1. Uphold the Party's Comprehensive Leadership to Ensure that Scientific and Technological Endeavors Advance along the Correct Path

The paramount prerequisite for implementing Xi Jinping's Thought on Scientific and Technological Innovation in the New Era is to uphold the Party's comprehensive leadership. The Party's leadership constitutes the fundamental guarantee for the continuous progress of all undertakings in China and serves as a crucial foundation for ensuring that scientific and technological innovation endeavors consistently advance along the correct political trajectory. Firstly, it is imperative to transform the Party's political advantages into institutional strengths for scientific and technological innovation. Party committees at all levels should enhance their guidance over major decisions and projects in the scientific and technological domain, ensuring that all aspects, including research planning, technological breakthroughs, and achievement commercialization, are in high alignment with the overall deployments of the Party. During the implementation process, it is essential to establish and refine internal and external supervision mechanisms within the Party, reinforcing the Party's leadership role through specialized discussions, performance evaluations, and other means to prevent deviations and risks in scientific and technological work. Only under the strong leadership of the Party can a stable political environment and robust policy support be provided for scientific and technological innovation, enabling various scientific and technological policies to be truly put into practice.

Meanwhile, upholding the Party's comprehensive leadership is also manifested in the reinforcement of organizational safeguards and team building. It is essential to propagate Xi Jinping's Thoughts on Scientific and Technological Innovation in the New Era to every corner among scientific and technological workers through regular organization of thematic study sessions, convening symposiums, and other means, enabling every researcher and technical expert to gain a profound understanding of the spiritual essence and strategic significance of these thoughts. Only when all scientific and technological workers maintain a high degree of ideological alignment with the Party Central Committee can a formidable cohesion and executive capacity be forged, thereby propelling China's scientific and technological endeavors to continuously reach new heights.

Adhere to the path of independent innovation with Chinese characteristics and promote high-level self-reliance and self-strengthening in science and technology. Following the path of independent innovation with Chinese characteristics constitutes a vital component in implementing Xi Jinping's Thoughts on Scientific and Technological Innovation in the New Era. Faced with the intensifying international competition in science and technology and the severe situation of external technological blockades, China must unswervingly embark on the road of independent innovation. Firstly, it is crucial to fully leverage the nation's advantages in resource integration and strategic decision-making. Through policy guidance and financial support, priority should be given to achieving breakthroughs in key and core technologies. By relying on major national projects and key laboratories, we should concentrate superior forces to tackle "choke-point" challenges, thereby establishing a core technological system endowed with independent intellectual property rights.

Secondly, it is imperative to recognize that adhering to independent innovation is not merely a

technological issue but also one concerning institutional mechanisms. It is essential to deepen the reform of the science and technology system, optimize the research management model, and establish a science and technology innovation system characterized by enterprises as the mainstay, market orientation, and deep integration of industry, academia, and research. During this process, governments at all levels and research institutions should jointly explore effective mechanisms for the transformation of scientific and technological achievements. By establishing technology transfer platforms and strengthening industry-academia-research collaboration, they can achieve seamless integration from research and development to the market, thereby enhancing the actual conversion rate of scientific and technological achievements (Wang, 2025).

Finally, it is crucial to emphasize the construction of an innovation ecosystem with Chinese characteristics. During the process of advancing independent innovation, full consideration must be given to China's national conditions and industrial foundations, avoiding the mere replication of foreign models. While maintaining a steadfast commitment to indigenous research and development, it is equally important to assimilate advanced foreign technologies and management experiences, thereby achieving complementary and synergistic development. Only through continuous innovation that rooted in tradition can China truly forge a path of scientific and technological innovation tailored to its national context, thus ensuring steady progress in the global technological competition.

4.2. Adhere to Innovation-Driven Development and Accelerate the Growth of New-Quality Productive Forces

Innovation serves as the primary driving force that leading development, a proposition that constitutes a key tenet of Xi Jinping's Thoughts on Scientific and Technological Innovation in the New Era. Implementing this ideology hinges on leveraging innovation-driven strategies to propel comprehensive upgrades across all sectors of the economy and society. First and foremost, it is imperative to intensify investment in research and development (R&D) and optimize the allocation of innovation resources. Governments at all levels should further refine the management systems for scientific research funding, incentivizing enterprises, universities, and research institutes to increase their autonomous R&D expenditures, with a particular focus on supporting foundational research and breakthroughs in cutting-edge technologies, thereby fostering a multi-tiered and broad-based innovation ecosystem.

Secondly, it is essential to establish an industrial development model centered on technological innovation. In the face of the dual pressures of upgrading traditional industries and the rise of emerging industries, government at all levels should employ policy instruments such as tax incentives, scientific and technological awards, and risk compensation to stimulate enterprises' impetus for technological innovation. Concurrently, vigorous efforts should be made to promote digital and intelligent transformation, leveraging new technologies such as intelligent manufacturing and the industrial internet to revamp traditional industries, thereby achieving the optimization and upgrading of industrial structures and a transformation in the mode of economic growth. Moreover, innovation extends beyond the technological realm, permeating various aspects including management, business models, and service models. Implementing Xi Jinping's Thoughts on Scientific and Technological Innovation in the New Era necessitates continuous

exploration in management innovation by governments and enterprises at all levels. By introducing modern information technologies and big data analytics, they can enhance enterprise management efficiency and decision-making capabilities, fostering a virtuous cycle where technological innovation and management innovation mutually reinforce each other, jointly propelling high-quality economic development.

Meanwhile, adhering to the strategic orientation of the "Four Orientations" is crucial for seizing the commanding heights in scientific and technological competition and future development. The "Four Orientations," namely, orienting towards the frontiers of global science and technology, the main battlefield of the economy, major national needs, and the health and well-being of the people, serve as significant strategic guidance within Xi Jinping's Thoughts on Scientific and Technological Innovation in the New Era. Implementing this strategic orientation first necessitates our proactive planning for the future trajectory of scientific and technological development, actively vying for the commanding heights in global scientific and technological competition. To this end, governments at all levels and relevant departments should formulate forward-looking scientific and technological plans, intensify support for basic research and cutting-edge technologies, and foster a cluster of strategically emerging industries with international competitiveness.

Furthermore, orienting towards the main battlefield of the economy necessitates that scientific and technological innovation must be closely integrated with the practical needs of national economic development. By focusing on economic restructuring, industrial upgrading, and supply-side structural reform, we should facilitate the practical application of scientific and technological achievements across various sectors, achieving effective transformation from technological breakthroughs to economic growth. Particular attention should be paid to key areas that are vital to the national economy and people's livelihood, such as energy, environmental protection, healthcare, and transportation. Through scientific and technological innovation, we aim to address bottleneck issues in practical development, providing robust support for the sustainable development of the economy and society.

Finally, orienting towards major national needs mandates that we undertake holistic planning of scientific and technological resources at the national strategic level, with a particular focus on overcoming technological challenges in domains such as national defense security, major infrastructure construction, and public health. Only by closely integrating scientific and technological innovation with the pressing strategic demands of the nation can we demonstrate formidable scientific and technological support capabilities in response to emergencies and major risks and challenges.

Moreover, orienting towards the health and well-being of the people underscores the fundamental human-centric requirement of scientific and technological innovation. Scientific and technological achievements must benefit the broad masses, enhancing the overall health standards and quality of life for all citizens. This not only requires researchers to prioritize technological innovation but also to emphasize the dissemination of scientific knowledge and the equitable sharing of research outcomes, thereby facilitating the widespread accessibility of the dividends of scientific and technological progress across society.

4.3. Adhere to Deepening Reforms to Stimulate Innovation Vitality and Establish an Institutional Environment that Supports Comprehensive Innovation

Scientific and technological innovation relies not only on capital and technology but also necessitates the safeguarding of an institutional environment. Deepening reforms serves as a crucial impetus for stimulating the vitality of scientific and technological innovation. To implement Xi Jinping's Thoughts on Scientific and Technological Innovation in the New Era, it is imperative to conduct a comprehensive review and optimization of the current scientific and technological management system, promoting the innovation and refinement of various institutional frameworks, including those governing scientific research evaluation, achievement transformation, and talent incentives.

Firstly, it is essential to reform the management system of scientific research projects and establish a scientific and equitable evaluation mechanism. Traditional scientific research evaluation tends to place excessive emphasis on short-term outcomes, which can readily lead researchers to prioritize quantity over quality. It is advisable to introduce multi-dimensional evaluation indicators that encourage original and groundbreaking research, ensuring that scientific research investments can genuinely be translated into high-quality scientific and technological achievements. At the same time, reforms should be advanced in the mechanism for transforming scientific research achievements. Currently, China still faces the "last-mile" challenge in the process of translating research outcomes into practical applications, with a disconnect between scientific research achievements and industrial markets. By establishing funds for the transformation of scientific and technological achievements, strengthening industry-university-research collaboration, and constructing technology trading platforms, we can expedite the conversion of scientific research achievements into tangible productive forces, fostering a virtuous interaction between scientific research and the economy.

Secondly, the reform of the talent incentive mechanism is equally crucial. The core of scientific and technological innovation lies in talent, yet traditional talent evaluation and incentive systems often suffer from issues of excessive rigidity and a lack of competitiveness. It is imperative to establish an open, inclusive, and incentive-compatible talent evaluation framework that fully respects knowledge and innovative achievements, enabling scientific and technological talents to enjoy greater career development opportunities and honor-based incentives. Through institutional innovation, we can continuously unleash the innovative vitality across society, injecting an inexhaustible driving force into China's scientific and technological innovation endeavors.

Furthermore, education serves as the cornerstone of scientific and technological innovation. It is essential to commence with foundational education, placing emphasis on cultivating students' scientific spirit and innovative capabilities. By enhancing the scientific research and teaching systems in primary and secondary schools as well as institutions of higher learning, we can forge a contingent of scientific and technological talents endowed with innovative spirit and practical prowess. Secondly, in the realm of higher education and vocational training, it is imperative to strengthen industry-university-research collaboration, facilitating information exchange and resource sharing among universities, enterprises, and research institutes. Establishing open innovation platforms will provide youthful talents with more practical opportunities and avenues

for growth. Moreover, the cultivation of internationalized talents represents a pivotal pathway to constructing a world-leading scientific and technological powerhouse. We should intensify cooperation with world-class universities and research institutions, leveraging joint training programs and international academic exchanges to attract high-caliber overseas talents and cutting-edge technologies, thereby elevating the overall standard of China's scientific and technological innovation. Simultaneously, it is crucial to establish a scientifically rational talent mobility mechanism that encourages cross-disciplinary and multidisciplinary talent exchanges, fostering an innovative ecosystem characterized by complementary strengths and shared resources.

Simultaneously, it is important to persist in promoting a virtuous cycle among education, science and technology, and talent, so as to build a world-leading scientific and technological powerhouse. The construction of such a powerhouse is inseparable from the virtuous interplay among education, science and technology, and talent. Implementing Xi Jinping's Thoughts on Scientific and Technological Innovation in the New Era necessitates taking the cultivation and attraction of high-caliber scientific and technological talent as a fundamental task, and establishing a comprehensive talent development system that encompasses basic education, higher education, vocational training, and continuing education.

Finally, it is crucial to emphasize the construction of a scientific and technological culture and the cultivation of a conducive social atmosphere. By promoting cultural values that respect knowledge and advocate innovation, a favorable social environment where the entire society cares about and supports scientific and technological innovation can be fostered. Only when the whole society forms a shared consensus and takes concerted actions to advance scientific and technological progress can we provide robust impetus and sustained support for China's endeavor to build itself into a world-leading scientific and technological powerhouse.

5. Conclusion and Prospects

Xi Jinping's Thoughts on Scientific and Technological Innovation in the New Era profoundly elucidate the strategic position of scientific and technological innovation in national development, clearly articulating the significance of pursuing an independent innovation path with Chinese characteristics and adhering to innovation-driven development. Under the comprehensive leadership of the Party, implementing these thoughts necessitates deepening the reform of the scientific and technological system, stimulating innovation vitality, and promoting a virtuous cycle among education, science and technology, and talent. The methodology for implementing Xi Jinping's thoughts on scientific and technological innovation in the new era represents not only a systematic endeavor but also a profound transformation spanning multiple domains, including politics, economy, science and technology, and culture.

Adhering to the Party's comprehensive leadership, pursuing an independent innovation path with Chinese characteristics, leading development through innovation, implementing the "Four Orientations" strategy, deepening reforms to stimulate innovation vitality, and promoting a virtuous cycle among education, science and technology, and talent collectively constitute the

fundamental pathway for comprehensively advancing China's scientific and technological innovation endeavors. Only through the synergistic efforts of these measures can we ensure that Xi Jinping's Thoughts on Scientific and Technological Innovation in the New Era take root in practice, drive continuous breakthroughs and leaps forward in China's scientific and technological undertakings, thereby enabling the country to secure a more proactive and advantageous position in global competition. This, in turn, will allow us to seize the commanding heights of scientific and technological competition and future development, provide robust institutional guarantees for realizing the goal of becoming a scientific and technological powerhouse, and furnish ample developmental impetus for building a great modern socialist country.

Author Contributions:

The author was solely responsible for all aspects of this study. The author has read and agreed to the published version of the manuscript.

Funding:

This study is supported by the 2024 Anhui Provincial Higher Education Research Project (2024AH052219), “Research on the System Construction and Path Optimization of Science and Technology Ethics Education in Anhui Provincial Universities.”

Institutional Review Board Statement:

Not applicable.

Informed Consent Statement:

Not applicable.

Data Availability Statement:

Not applicable.

Conflict of Interest:

The authors declare no conflict of interest.

References

Africa-China: Xi strengthens ties. (2018). Africa Research Bulletin: Economic, Financial and Technical Series, 55(7), 22205C–22206C.

Chen, R. (2024). Metaphor analysis of security discourse in Xi Jinping: The Governance of China (Volume IV) and its English translation strategies. Open Journal of Modern Linguistics, 14(5), 966–980.

Clemens, W. C., Jr. (2020). Triangular diplomacy in the age of Putin, Xi and Trump. Global Asia, 15(1), 84–88.

F. L. (2019). Healthy China: Strategic thinking development of Jinping Xi. Indian Journal of Pharmaceutical Sciences, 81(1), S45.

Guo, J. M. (2017). Xi Jinping's core thoughts about S&T innovation. Studies in Dialectics of Nature, 33(11), 119–123.

Li, Z. (2025). The core essence and contemporary value of General Secretary Xi Jinping's important discourse on economic system reform. Social Sciences in Guangdong, (2), 5–14, 285.

Putin, Xi could launch Power of Siberia pipeline in TV link-up—Peskov. (2019). Interfax: Russia & CIS Energy Newswire.

Putin, Xi praise effective security cooperation of BRICS countries. (2018). Interfax: Russia & CIS Military Newswire.

Ren, L. M. (2025). Review of research on the ten forefront issues of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era (2024). Studies on Marxism, (2), 127–147.

Under the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era: Focusing on the major task of scientific and technological innovation. (2024). Xin Xiang Review, (8), 4.

Wang, F. (2025). Advancing the systematic and rationalized study of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era: Review of the 11th Forum on Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era and the 14th Academic Forum on the Sinicization of Marxism. Studies on Marxism, (1), 142–144.

Wang, Y. (2025). The theoretical contribution, core meaning, and practical value of Xi Jinping's important discourse on the development of digital economy. Studies on Marxism, (1), 30–40.

Wu, F., & Zhu, H. (2024). A study on the English translation of Xi Jinping: The Governance of China (Volume IV) from the perspective of Baker's narrative theory. Journal of Humanities, Arts and Social Science, 8(11).

Xi congratulates Shoigu on successful meeting of Intergovt Commission, sends regards to Putin. (2018). Interfax: Russia & CIS Military Newswire.

Xi says China, Russia ready to work on international peace guarantees for Korean Peninsula (Part 2). (2018). Interfax: Russia & CIS Military Newswire.