

HO CHI MINH NATIONAL ACADEMY OF POLITICS

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**SUPPORTING INNOVATION IN
REAL ESTATE ENTERPRISES
IN HANOI**

**SUMMARY OF THE DOCTORAL DISSERTATION
MAJOR: ECONOMIC MANAGEMENT
CODE: 9310110**

HA NOI - 2025

This work was completed at
HO CHI MINH NATIONAL ACADEMY OF POLITICS

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Evaluation Committee at Ho Chi Minh National Academy of Politics**

On day ... month year 2026

**The dissertation is available at: the National Library and the Library of
Ho Chi Minh National Academy of Politics**

INTRODUCTION

1. The Rationale for the Study

In the context of the knowledge-based economy, globalization, and rapid digital transformation, innovation is increasingly recognized as a core driver enabling enterprises to establish competitive advantages and pursue sustainable development. According to theories of dynamic capabilities and absorptive capacity, innovation does not solely originate from the internal efforts of enterprises but also depends closely on external support mechanisms, the participation of the State, the role of intermediary organizations, as well as the level of linkage between enterprises and research institutes and universities. Therefore, studying innovation support has important theoretical significance in clarifying mechanisms that enhance enterprises' innovation capacity and long-term competitiveness.

In the real estate sector, the role of innovation becomes even more significant in the context of increasing demands for advanced technologies, green standards, and sustainable development. Innovation not only contributes to improving the quality of products and services but also promotes the formation and development of smart and environmentally friendly real estate models that are consistent with the trends of urbanization and green economic development. Through innovation, real estate enterprises can increase added value, expand market share, improve operational efficiency, and enhance their competitive capacity. However, in practice, although the real estate market in Hanoi is one of the most dynamic and rapidly developing markets in Vietnam, the level of innovation among real estate enterprises in the city remains limited. The adoption of digital technologies is uneven, investment in research and development (R&D) is still modest, and product and business model innovation remains fragmented, while innovation management capabilities have not received adequate attention. These limitations create considerable challenges for real estate enterprises in Hanoi in adapting to new market requirements and improving operational performance. Therefore, examining and assessing the current status of innovation capacity among real estate enterprises in Hanoi is necessary to clearly identify strengths, weaknesses, and gaps that require support from relevant stakeholders, particularly government authorities.

In addition, although a number of studies have addressed innovation in enterprises, in-depth research on innovation in the real estate sector remains relatively limited. In particular, systematic evaluations of innovation support mechanisms from the central to local levels for the real estate industry have not received sufficient attention. In reality, many existing policies remain fragmented and lack sector-specific orientation; enterprises' access to these policies is still limited, and the linkages among the State, research institutions, universities, and enterprises have not yet been truly effective. In Hanoi, specialized support programs related to construction technology, digital transformation, green standards, and new operational models remain insufficient, thereby reducing the effectiveness of promoting innovation within the real estate sector.

Given Hanoi's crucial role in national economic growth, enhancing the innovation capacity of real estate enterprises holds strategic significance for the sustainable development of the market. From this perspective, the doctoral candidate has chosen the dissertation topic "Supporting Innovation in Real Estate Enterprises in Hanoi," with the expectation of contributing both theoretically and practically to improving innovation support mechanisms and enhancing the competitiveness of real estate enterprises in the era of the knowledge-based economy.

2. Research Objectives and Research Tasks

2.1. Research Objectives

This dissertation aims to clarify the theoretical and practical basis of innovation support in real estate enterprises in Hanoi, approaching innovation support as a comprehensive system of tools, mechanisms, and resources, in which public policy plays a guiding and leading role to create a stable, long-term foundation for enterprises to implement innovation. Based on the innovation capacity of enterprises, the dissertation analyzes the level and mechanisms of impact of various forms of innovation support such as financial support, tax support, research and technology transfer, human resource development, and intellectual property protection on real estate enterprises in Hanoi. From this, it proposes a system of scientifically sound and highly feasible solutions to enhance innovation capacity and promote sustainable development of enterprises in the context of green, smart, and digitally transformed cities.

2.2. Research Tasks

(i) Systematizing the theoretical basis of innovation, the innovation capacity of real estate

enterprises, and innovation support for enterprises, focusing on the State's support policy system.

(ii) Assessing the current state of innovation capacity of real estate enterprises in Hanoi.

(iii) Analyzing the current state of innovation support for real estate enterprises in Hanoi, focusing on support policies from the central and local governments.

(iv) Developing and analyzing a model to assess the impact of innovation support measures on the innovation capacity of real estate enterprises in Hanoi, thereby identifying effective support measures and barriers in the innovation support system.

(v) Proposing a system of innovation support solutions that are comprehensive, long-term, and suitable to the specific characteristics of the real estate industry in Hanoi, contributing to enhancing the innovation capacity and sustainable competitiveness of enterprises.

3. Research Questions

(i) What is the current level of innovation capacity of real estate enterprises in Hanoi, considering strategic, cultural, human resource, and financial aspects of innovation?

(ii) What is the current state of innovation support from central government agencies and the Hanoi city government for real estate enterprises in Hanoi?

(iii) How do the contents of innovation support (financial support, tax support, research and technology transfer, human resources, and intellectual property protection) impact the innovation capacity of real estate enterprises in Hanoi?

(iv) What are the limitations and barriers in the current innovation support system, and how do these barriers affect the improvement of innovation capacity of real estate enterprises?

(v) How should the innovation support system be improved to better suit the needs, conditions, and characteristics of real estate enterprises in Hanoi in the context of green and smart urban development?

4. Subject and Scope of the Dissertation

- **Research Subject:** The research subject of this dissertation is the content supporting innovation and its impact on the innovation capacity of real estate enterprises in Hanoi. Within the research framework, innovation support is considered as a system of key tools and mechanisms, including: financial support; tax support for innovation activities; support for research, technology transfer and application; support for human resource development for innovation; and support for intellectual property protection of innovation results. The innovation capacity of real estate enterprises is considered as a set of fundamental capabilities reflecting the ability to form and maintain innovation activities in the long term, expressed through strategic capacity, innovation culture, human resources, and financial capacity for research and development activities.

- Scope of Research:

(i) In terms of content: The dissertation focuses on analyzing innovation support measures, including financial and tax support, research and technology transfer, human resource development, and intellectual property protection, while also assessing the impact of these support measures on the innovation capacity of real estate enterprises in Hanoi. The research does not delve into the final results of innovation but focuses on innovation capacity as a measurable intermediary factor that is directly affected by the innovation support system.

(ii) In terms of space: The research scope is limited to real estate enterprises in Hanoi. Hanoi was chosen because it is a major economic and political center, concentrating many real estate enterprises of diverse sizes and models, and is relatively fully affected by innovation support policies and programs from the central and local governments, creating favorable conditions for evaluating the impact of the innovation support system.

(iii) Regarding time: The dissertation focuses on evaluating the current situation and impact of innovation support during the period 2020-2024, in the context of digital transformation and the development of green and smart cities; based on this, it proposes solutions oriented towards 2030, with a vision to 2035, to enhance innovation capacity and promote the sustainable development of real estate enterprises.

5. Contributions of the Dissertation Topic

5.1. Theoretical implications

The dissertation contributes to systematizing and supplementing the theoretical foundation of innovation support in enterprises by approaching innovation support as a comprehensive system of tools and mechanisms, in which public policy plays a guiding and leading role in enhancing the innovation

capacity of enterprises. The theoretical contributions of the dissertation are as follows:

(i) The dissertation has clarified the relationship between innovation support contents and the innovation capacity of enterprises. Specifically, the dissertation has analyzed the impact of various forms of innovation support, including financial and tax support, research and technology transfer, human resource development, and intellectual property protection, on the innovation capacity of enterprises in the real estate sector.

(ii) The dissertation proposed an analytical framework and a model for evaluating the impact of each innovation support content on the innovation capacity of real estate enterprises, thereby contributing to supplementing and refining existing theoretical approaches in research on state management and innovation support.

(iii) Through the analysis of the characteristics of the real estate industry, the dissertation clarified the specific requirements and conditions for innovation support in the industry, thereby contributing theoretical arguments and an analytical framework suitable to the industry context.

5.2. Practical implications

The dissertation makes significant practical contributions by proposing a system of solutions to support innovation tailored to the specific characteristics of real estate enterprises in Hanoi within the context of market restructuring, digital transformation, and sustainable development. Specifically, the dissertation proposes solutions at three levels: (i) the State level, aiming to improve the policy environment, reduce fragmentation, remove legal barriers, and strengthen resources to support innovation; (ii) the enterprise level, focusing on enhancing internal innovation capacity, promoting cooperation with entities in the innovation ecosystem, and overcoming limitations in R&D, technology, and innovation culture; and (iii) the long-term strategic orientation level, aiming to integrate innovation as a core component in the development strategy of real estate enterprises. These contributions not only provide a practical basis for real estate enterprises to enhance their competitiveness and adaptability, but also support state management agencies in designing and implementing effective innovation support policies, contributing to promoting the sustainable development of the real estate market in Hanoi.

6. Structure of the Dissertation

Besides the introduction and conclusion, bibliography, and appendices, the dissertation content consists of 5 chapters:

Chapter 1: Overview of research on innovation support in real estate enterprises

Chapter 2: Theoretical basis of innovation support in real estate enterprises

Chapter 3: Design and research methods of the dissertation

Chapter 4: Results of analysis of the current situation of innovation support in real estate enterprises in Hanoi

Chapter 5: Orientation and solutions for innovation support in real estate enterprises in Hanoi.

Chapter 1:

OVERVIEW OF RESEARCH ON INNOVATION SUPPORT IN REAL ESTATE ENTERPRISES

1.1. OVERVIEW OF INTERNATIONAL AND DOMESTIC STUDIES ON INNOVATION IN REAL ESTATE ENTERPRISES

1.1.1. Overview of research on innovation in enterprises

1.1.1.1. Types and roles of innovation

The concept of innovation was founded by Joseph Schumpeter (1934), according to which innovation is the exploitation of existing resources in new ways to create value through new products, processes, markets or organizational methods. This approach emphasizes that innovation is not limited to groundbreaking inventions but also includes the creative combination and application of existing knowledge and technologies in new contexts. Based on this, modern studies consider innovation as a factor closely linked to the strategy, organizational structure, and competitiveness of enterprises.

To facilitate analysis and measurement, many studies have classified innovation according to different criteria. The Oslo Guidelines (OECD, 2018) distinguish two main groups: product innovation and process innovation, where process innovation encompasses the entire chain of enterprise activities, from production, distribution, and marketing to management and information systems. In addition,

innovation is also classified according to its level of novelty, from novel to the enterprise to novel to the market or the world, as well as according to the degree of technological breakthrough, from incremental improvement to fundamental innovation.

At the national level, many studies affirm that innovation is a key driver of economic growth, productivity enhancement, and sustainable development (Nelson and Winter, 1982; Hall and Lerner, 2010). At the enterprise level, innovation is seen as a strategic tool to improve operational efficiency, expand markets, and maintain a sustainable competitive advantage in an increasingly competitive environment.

1.1.1.2. Factors Affecting Enterprise Innovation

International studies suggest that innovation is the result of the interaction between internal enterprise factors and the external environment. The Innovation Systems approach of Freeman (1987) and Lundvall (1992) emphasizes the role of R&D infrastructure, public policy, high-quality human resources, and coordination between the State, enterprises, and research institutions. In this system, the State plays the role of creating a policy environment, providing resources, and protecting intellectual property rights, thereby encouraging enterprises to invest in innovation.

Recently, the role of the innovation ecosystem and open innovation has been increasingly emphasized. According to Chesbrough (2003), enterprises need to expand cooperation with external partners such as startups, research institutions, and even competitors to leverage external knowledge and resources. Open innovation accelerates innovation, reduces costs, and disperses risks, making it particularly suitable for businesses with limited resources. Furthermore, studies highlight the crucial role of a creative, well-trained workforce capable of adapting to new technologies in realizing innovation initiatives.

Besides the driving factors, several barriers to innovation have also been identified. Financial constraints are a common obstacle, especially for small and medium-sized enterprises (SMEs), where high R&D costs and significant risks make accessing capital difficult. A shortage of high-quality human resources and skill gaps in digital technology, AI, and big data also hinder technology adoption. Additionally, inequality in access to technology infrastructure, the high risk and uncertainty of innovation, and a lack of linkages within the innovation ecosystem all impede innovation at the enterprise level.

1.1.1.3. Innovation Trends in the Context of Digital Transformation and Globalization

Recent studies point to three prominent trends in corporate innovation. First is open innovation, promoting multi-faceted collaboration to accelerate innovation and optimize resources. Second is digital transformation, where innovation goes beyond simply adopting technology and encompasses restructuring business models and value creation methods. Technologies such as AI, Big Data, IoT, and blockchain have fundamentally changed how businesses operate and interact with customers, creating new business models. Third is sustainable innovation, focusing on environmentally friendly products, processes, and business models, aligned with sustainable development goals and corporate social responsibility.

1.1.1.4. Research on Innovation in Vietnamese Businesses

In Vietnam, many studies affirm that innovation is a key factor in enhancing the competitiveness of businesses in the context of integration and digital transformation. However, practice shows that innovation in Vietnamese businesses still faces many limitations such as a lack of financial resources, a shortage of high-quality human resources, and an inconsistent policy environment (Phan Thi Cam Lai, 2024). Studies all emphasize the role of the State in perfecting support policies, increasing investment in R&D, promoting linkages between businesses and research institutes, as well as encouraging digital transformation and green innovation (Do Anh Duc, Nguyen Thu Huong and Ha Dieu Linh, 2022). In general, building a synchronized and effective innovation ecosystem is considered a key condition to realize the potential of innovation, thereby promoting sustainable growth of businesses and the Vietnamese economy.

1.1.2. Overview of Research on Innovation in Real Estate Enterprises

Domestic and international studies show that innovation is increasingly playing a central role in enhancing the competitiveness and sustainable development of real estate enterprises, especially in the context of the industry being strongly impacted by digital transformation, climate change, and rapidly changing customer needs. Overall, research on innovation in the real estate sector focuses on three main

directions: technology application and digital transformation; innovation in business models and operational management; and innovation linked to sustainable development goals.

At the international level, many studies emphasize the role of real estate technology (PropTech) as a key driver of innovation throughout the entire real estate value chain, from transactions and project development to asset management and operation. Technologies such as blockchain, the Internet of Things (IoT), digital platforms, and digital communication contribute to increased transparency, optimized operational efficiency, and improved customer experience (Yarlagadda and Gampala, 2020). However, the effectiveness of technology application largely depends on the legal framework, technical infrastructure, and organizational capacity of businesses. In addition, new management methods such as Building Information Modeling (BIM) and Lean Construction are considered important forms of process innovation, helping to reduce waste and increase productivity in real estate projects.

Alongside technological innovation, many international studies also indicate that business model innovation is a crucial pillar of innovation in the real estate sector. The development of sharing economy platforms and digital technology-based business models, such as Airbnb, has transformed the way assets are exploited and utilized, aiming to optimize resources and increase value for businesses and consumers (Guttentag, 2015). Another important research direction focuses on innovation linked to sustainable development goals, emphasizing the role of green buildings, sustainable construction materials, and the integration of renewable energy in minimizing environmental impact and increasing long-term asset value (Kibert, 2016). However, high initial investment costs and a lack of comprehensive support policies remain significant barriers.

In Vietnam, studies on innovation in the real estate sector mainly clarify the current state of technology application such as PropTech, BIM, and blockchain, while also pointing out limitations in the legal framework, technological infrastructure, and human resources (Nguyen Thi Bich Thuan, 2024; Le Hoai Nam et al., 2018).

1.2. OVERVIEW OF INTERNATIONAL AND DOMESTIC STUDIES ON SUPPORTING INNOVATION FOR ENTERPRISES

International studies consistently point to the positive role of financial support tools and tax incentives for enterprise R&D investment. Bloom, Griffith, and Van Reenen (2002) showed that R&D tax incentives help increase research spending in a long-term cumulative manner. Czarnitzki and Delanote (2015) emphasized that subsidies and tax incentives are particularly significant in reducing innovation risk for small and medium-sized enterprises, but need to be combined with other support to transform investment into innovation results. Furthermore, Lokshin and Mohnen (2012) and Dimos and Pugh (2016) assert that the effectiveness of policies largely depends on the size of the enterprise, the industry, as well as the design and implementation mechanisms.

In parallel with financial support, intellectual property protection is considered a fundamental pillar of the innovation support system. Kanwar and Evenson (2003) point out the positive relationship between the level of intellectual property protection and R&D investment, especially in countries with effective enforcement systems. However, Hughes and Mina (2012) note that high costs and complex procedures can diminish the effectiveness of this tool for small and medium-sized enterprises. Another important approach is supporting innovation through the development of an innovation ecosystem. The “Triple Helix” model by Etzkowitz and Leydesdorff (2000) emphasizes the interactive role between government, businesses, and universities, while Audretsch and Feldman (2004) clarify the impact of knowledge diffusion and geographical space on the formation of innovation centers. In addition, studies have also noted the effectiveness of innovation cluster support, public investment in R&D, and green technology policies.

In Vietnam, recent studies and reports show that the innovation support system has contributed to enhancing the innovation capacity of businesses through finance, infrastructure, human resources, and ecosystem connectivity. However, the effectiveness of support still largely depends on the accessibility and exploitation of resources and the degree of policy consistency. Overall, the research overview confirms that innovation support has a positive impact on business innovation activities, but its effectiveness is only maximized when support tools are consistently designed and integrated within a comprehensive and sustainable innovation ecosystem.

1.3. RESEARCH GAP

Innovation is increasingly recognized as a key driver of competitiveness and sustainable development for businesses, especially in the real estate sector – an industry heavily impacted by market

fluctuations, legal frameworks, and sustainable urban development requirements. In this context, forms of innovation support from the State are considered important tools to help businesses improve their innovation capacity and results. However, an overview of international and domestic studies reveals several notable research gaps, specifically:

(i) Current studies are limited in assessing the actual impact and mechanisms of influence of each innovation support group on the innovation activities of businesses, especially real estate enterprises, with most only describing policies.

(ii) An approach tailored to the specifics of the real estate industry is lacking, while characteristics such as large project scale, long lifecycles, and high dependence on institutions can change how businesses approach and transform innovation support.

(iii) Studies based on empirical data at the enterprise level are limited, affecting the reliability of conclusions and recommendations.

(iv) The local context, especially Hanoi, has not been systematically considered. These gaps highlight the need for in-depth, industry-specific, and locally-contextualized empirical studies to clarify the role and effectiveness of innovation support for real estate enterprises.

Chapter 2

THEORETICAL FOUNDATIONS OF SUPPORTING INNOVATION IN REAL ESTATE ENTERPRISES

2.1. THEORY OF REAL ESTATE ENTERPRISES

According to the Vietnamese Enterprise Law (2020), an enterprise is a legally established organization for the purpose of conducting business, existing in various legal forms such as limited liability companies, joint-stock companies, partnerships, and private enterprises. This diversity allows enterprises to choose a model suitable to their scale, objectives, and management capabilities.

In the real estate sector, enterprises operate in a highly specialized industry because their business object is real estate – a type of asset attached to land and immovable. Vietnamese law, especially the 2015 Civil Code and the Law on Real Estate Business No. 29/2023/QH15, has clearly defined the scope of real estate and related business activities. Accordingly, real estate business encompasses investment in project development, buying, selling, leasing, and transferring real estate, as well as providing services such as brokerage, consulting, and real estate management, forming a complex market with the participation of many entities. The real estate sector has distinctive characteristics compared to other industries. The supply of real estate has low elasticity due to limited land availability and is tightly controlled by planning regulations. Real estate transactions are often lengthy, costly, and heavily dependent on legal factors, reducing market liquidity. At the same time, due to the long investment cycle and significant time lag, the real estate market exhibits clear cyclical characteristics and is strongly influenced by economic growth, urbanization, and government policies.

In Hanoi, real estate enterprises operate within the unique context of a central urban area in terms of politics, economics, and culture. Besides the opportunity to develop large-scale projects, businesses face the pressure of balancing modern development with the preservation of historical and cultural values, while also facing increasing competition. This necessitates urgent innovation, technology application, and improved management capabilities for sustainable development. Therefore, research on real estate enterprises and innovation in Hanoi is not only of theoretical significance but also holds crucial practical value for the long-term development of the industry and the city.

2.2. THEORY OF INNOVATION CAPABILITY IN REAL ESTATE ENTERPRISES

2.2.1. Concept and Components of Innovation Capability in Enterprises

Innovation capacity in enterprises is understood as the ability to mobilize, combine, and effectively utilize internal and external resources to continuously create and implement innovative activities. Studies by Lawson and Samson (2001) and Tidd and Bessant (2011) suggest that this capacity is not only associated with idea creation but also includes the ability to manage, organize, and implement innovation effectively. Another important approach is the concept of absorption capacity by Cohen and Levinthal (1990), which emphasizes the role of receiving, learning, and applying knowledge from external sources. At the same time, recent studies have also indicated that innovation capacity increasingly depends on the level of linkage and cooperation between businesses and entities in the innovation ecosystem. In the Vietnamese context, Phan To Uyen et al. (2020) approached innovation capacity as a synthesis of endogenous and exogenous resource factors, from leadership, human resources, finance, innovation culture to the policy environment and competitive pressure.

In terms of components, the innovation capacity of a business is formed from many core elements, including a clear vision and innovation strategy; sufficient financial resources to invest in R&D; high-quality human resources; technological capabilities; and an organizational culture that encourages creativity, experimentation, and risk acceptance. These factors have a close interactive relationship, determining the ability to transform knowledge and ideas into concrete innovative results.

2.2.2. Factors Affecting the Innovation Capacity of Real Estate Enterprises

For real estate enterprises, innovation capacity is strongly influenced by external factors such as government policies and planning, the development of science and technology, access to capital, the quality of human resources, and market trends. The unique characteristics of the real estate sector—large capital scale, long investment cycles, and high dependence on institutions—make innovation both an essential requirement and a major challenge. Therefore, enhancing innovation capacity in real estate enterprises requires a holistic approach, harmoniously combining the internal efforts of the enterprise with synchronized support from the State and the innovation ecosystem. This not only contributes to improving the competitiveness of enterprises but also promotes the sustainable development of the real estate market and the economy as a whole.

2.3. THEORY OF SUPPORTING INNOVATION FOR REAL ESTATE ENTERPRISES

2.3.1. The Importance of Supporting Innovation for Real Estate Enterprises

Given the industry's characteristics of a long investment cycle, large capital scale, high risk level, and strong influence from the legal framework, market, and technological advancements, the innovation process of real estate enterprises is unlikely to be effective without systemic support. In this context, government policy plays a fundamental institutional role, guiding and directing forms of innovation support, thereby creating a favorable environment for enterprises to implement innovation activities in line with the industry's sustainable development orientation.

Theoretically, innovation support helps guide the innovation process of businesses towards strategic priorities such as the development of green buildings, smart cities, and the digitalization of real estate management and operation. Through appropriate support mechanisms, innovation activities are linked to the long-term goals of the industry and the city, limiting fragmented and uncoordinated innovation. At the same time, this support contributes to minimizing innovation risks and costs by sharing the financial burden, supporting access to capital, providing technical advice, and connecting resources, creating conditions for businesses to confidently invest in high-tech initiatives.

In addition, innovation support is a crucial driving force for real estate enterprises to enhance their competitiveness in an increasingly competitive environment. Accessing and applying new technologies helps businesses improve management efficiency, increase transparency, and create differentiated value for their products and services. At the same time, support for intellectual property protection and commercialization of innovation results contributes to protecting creative achievements, strengthening competitive advantages, and creating positive spillover effects on urban development and the quality of life of the community.

2.3.2. Innovation Support System for Real Estate Enterprises

Structurally, the innovation support system for real estate enterprises is formed from many mutually reinforcing support groups. First, there are financial supports aimed at minimizing capital barriers, creating conditions for enterprises to implement R&D activities, testing and applying new technologies. Next, tax incentives play a role in creating incentives for investment in innovation, encouraging enterprises to reinvest profits in innovation initiatives. R&D and technology transfer support helps connect scientific knowledge with production and business practices, enhancing the commercialization of innovation in the real estate sector. Simultaneously, supporting human resource development contributes to enhancing the capacity of businesses to absorb and implement innovation, while supporting intellectual property protection creates a foundation for businesses to confidently invest in long-term innovation activities. The harmonious combination of these support measures not only helps businesses improve their innovation capabilities but also contributes to the sustainable development of the real estate industry and the socio-economic landscape in the long term.

2.4. RESEARCH MODEL OF THE DISSERTATION ON THE IMPACT OF INNOVATION SUPPORT ON THE INNOVATION CAPACITY OF REAL ESTATE

ENTERPRISES IN HANOI

2.4.1. Theoretical Basis of the Dissertation Topic

The research model of the dissertation is built on the foundation of Innovation Ecosystem Theory, an approach that emphasizes the systemic nature, interaction, and role of supporting resources in the process of forming and developing the innovation capacity of enterprises. According to this approach, innovation is not the result of a single effort from the enterprise but rather the product of continuous interaction between entities in an open ecosystem, where financial, intellectual, technological, human, and institutional resources are connected, shared, and transformed into innovative value. This approach is particularly suitable for the research context of the dissertation, viewing innovation support as a set of external resources and conditions that promote and enhance the effectiveness of innovation in real estate enterprises.

Within the framework of the innovation ecosystem theory, the dissertation identifies three fundamental groups of entities: the State, enterprises, and intermediary organizations. The State plays a constructive and coordinating role in the ecosystem through designing and implementing policies to support innovation, establishing an institutional framework for enterprises to access resources in finance, taxation, research and technology transfer, human resource development, and intellectual property protection. Businesses are the central entities of the ecosystem, receiving and transforming innovation support into concrete innovation activities; the innovation capacity of businesses depends not only on internal resources but also on their ability to effectively absorb and utilize support from the external environment. Intermediate organizations such as research institutes, universities, financial institutions, and industry associations play a connecting role, disseminating knowledge and supporting businesses in expanding their innovation cooperation networks.

In the context of a transitional economy like Vietnam, where the technology market is not yet fully developed and the endogenous capacity of businesses is limited, the state-led innovation support system plays a particularly important role in activating, maintaining, and guiding the innovation momentum of businesses. For the real estate sector – an industry with a long investment cycle, high capital requirements, strong dependence on institutions, and increasing pressure from sustainable development demands – the role of innovation support becomes even more prominent. Based on a synthesis of theory and practice, the dissertation focuses on five groups of innovation support contents that directly impact the innovation capacity of real estate enterprises, including: financial support; support through tax incentives; support for research, development, and technology transfer; support for human resource development for innovation; and support for intellectual property protection.

2.4.2. Research Model of the Dissertation

Based on this theoretical foundation, the dissertation proposes a quantitative research model to analyze the impact of state-sponsored innovation support on the innovation capacity of real estate enterprises in Hanoi. In the model, innovation support content is considered a group of independent variables, reflecting the extent and scope of businesses' access to support resources through central and local government policies. The innovation capacity of businesses is the dependent variable, approached from the perspective of internal capacity and organizational readiness for innovation, as expressed through innovation strategy, organizational culture, human resource capacity, and financial resource availability. This approach allows the dissertation to clarify the role of innovation support in enhancing the endogenous capacity of real estate businesses, thereby contributing to explaining the mechanism of impact of innovation support policies in the specific context of the Hanoi real estate market.

H1: Financial support for innovation has a positive impact on the innovation capacity of real estate enterprises.

H2: Support through tax incentives has a positive impact on the innovation capacity of real estate enterprises.

H3: Supporting research, transfer, and application of science and technology has a positive impact on the innovation capacity of real estate enterprises.

H4: Supporting training and development of human resources for innovation has a positive impact on the innovation capacity of real estate enterprises.

H5: Supporting the protection of intellectual property rights has a positive impact on the innovation capacity of real estate businesses.

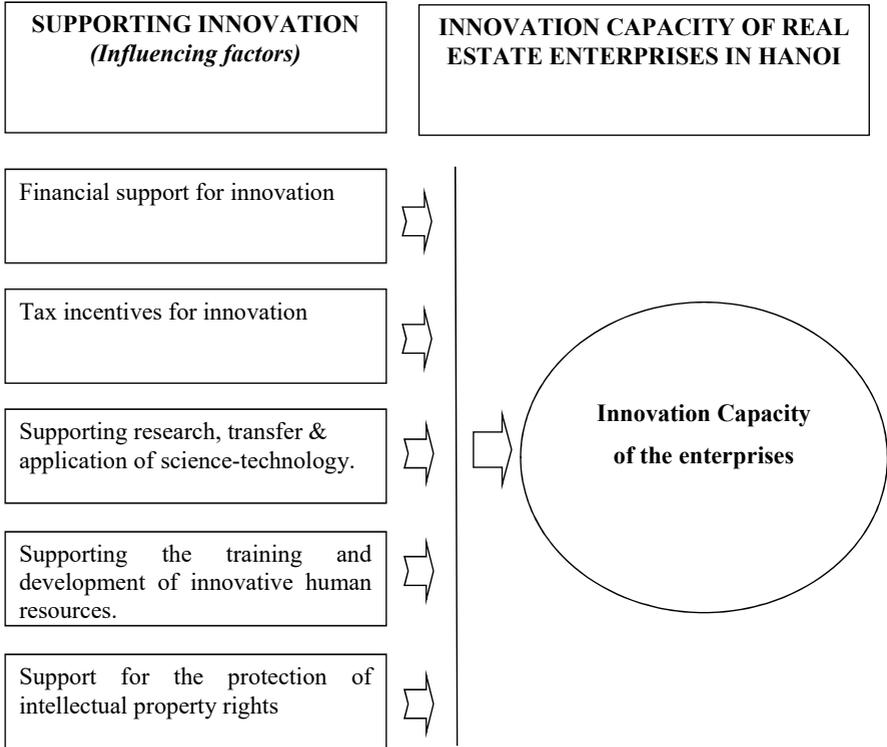


Figure 2.1: Research model on the impact of state innovation support on the innovation capacity of real estate enterprises in Hanoi.

Source: Author's Proposal

Verifying the research model not only contributes to clarifying the impact of innovation support forms on the innovation capacity of real estate enterprises, but also provides scientifically grounded, empirically-based arguments to assess the effectiveness and feasibility of implementing these support forms in practice. Through the systematic measurement of specific innovation support groups, the research model allows for the clear identification of mechanisms and transmission channels of impact, thereby clarifying the extent and manner in which each form of innovation support impacts the innovation capacity of enterprises in the specific context of real estate enterprises in Hanoi.

Chapter 3

DESIGN AND RESEARCH METHODS OF THE DISSERTATION

3.1. RESEARCH PROCESS

The research process of this dissertation is built on a systems approach to clarify the impact of state-sponsored innovation support on the innovation capacity of real estate enterprises in Hanoi. In the context of a real estate market facing increasing competition, digital transformation, and the demands of sustainable development, the research focuses on the gap between state-sponsored innovation support and the ability of enterprises to access, absorb, and transform this support into genuine innovation capacity,

especially for small and medium-sized enterprises (SMEs). Based on this, the dissertation builds a theoretical foundation and research framework by applying innovation ecosystem theory, theories of enterprise innovation capacity, and theories related to state-sponsored innovation support. A review of domestic and international research is conducted to identify research gaps, showing that the impact of innovation support on real estate enterprises in Vietnam has not yet been fully studied. From there, a research framework was formed to analyze the relationship between the five main innovation support groups and the components of enterprise innovation capacity.

Regarding research methodology, the dissertation applies a hybrid approach combining qualitative and quantitative research to clarify the impact mechanisms and test the research model and hypotheses. The research results serve as a basis for evaluating the effectiveness of innovation support and proposing appropriate policy recommendations.

3.2. QUALITATIVE RESEARCH METHODS

The qualitative research in this dissertation is used to collect in-depth perspectives and assessments from experts and real estate businesses on how the State's innovation support mechanisms are implemented, accessed, and transformed into innovation capacity in business operations. Specifically, the qualitative research focuses on two main objectives. Firstly, the study analyzes the practical approaches and use of innovation support mechanisms, assessing the suitability and effectiveness of each support group within the specific context of the real estate industry, characterized by long investment cycles, large capital scales, and high institutional dependence. Secondly, it gathers in-depth opinions to supplement practical arguments for refining the research model and proposing support solutions appropriate to the Hanoi context.

Qualitative data was collected through semi-structured interviews with policymakers, experts, and real estate businesses, combined with focus group discussions. The data was analyzed using content analysis to clarify the relationship between innovation support content and the innovation capacity of businesses.

3.3. QUANTITATIVE RESEARCH METHODOLOGY

Quantitative research in this dissertation is used to test the model and research hypotheses regarding the impact of state-sponsored innovation support on the innovation capacity of real estate enterprises in Hanoi. Data was collected through questionnaire surveys of real estate enterprises operating in the area, focusing on measuring the level of access to and utilization of innovation support and the impact of this support on the enterprises' innovation capacity.

The support groups considered include financial support, tax incentives, research and technology transfer, human resource training, and intellectual property protection. The scale was constructed based on theoretical foundations and referenced reputable measurement frameworks such as the Oslo Guidelines (OECD, 2018), Circular 17/2019/TT-BKHHCN, and the NIC-GIZ criteria (2022).

The survey sample included 198 real estate businesses in Hanoi, with joint-stock companies and limited liability companies accounting for the majority, reflecting the prevailing trends of business models in the industry. The majority of businesses are small and medium-sized enterprises (SMEs), primarily operating in brokerage and investment-development. The size of the workforce, capital, and revenue of these businesses are at an average level, indicating a dispersed structure in the Hanoi real estate market, with SMEs playing a dominant role. Therefore, the survey sample fairly accurately reflects the practical characteristics of the market, creating a suitable database for analyzing innovation capacity.

Regarding data analysis, the study used SPSS software to process the survey data. The scales were tested for reliability using Cronbach's Alpha and validity using exploratory factor analysis (EFA). Pearson correlation analysis was applied to examine the relationships between variables and control for multicollinearity. Based on this, a linear regression model was used to test the extent and direction of the impact of innovation support content on the innovation capacity of real estate enterprises, thereby providing empirical evidence for hypothesis testing and policy recommendations.

Table 3.1: Information on the survey sample of real estate businesses in Hanoi

Criteria	Number of businesses	Percentage (%)
I. Type of business as stated in the investment certificate.		
State-owned enterprises	10	5,1%
Limited Liability Company	60	30,3%
Partnership company	5	2,5%
Private enterprise	20	10,1%
Joint Stock Company	80	40,4%
Cooperative/Union of Cooperatives	3	1,5%
Foreign businesses	10	5,1%
Joint Venture Company	5	2,5%
Other types	5	2,5%
II. Business size		
Micro-enterprises	50	25,3%
Small and medium-sized enterprises	120	60,6%
Large businesses	28	14,1%
III. The company's main business activities		
Investment and project development	70	35,4%
Real estate broker	80	40,4%
Operations management	30	15,2%
Other	18	9,0%
IV. Total number of employees of the company as of December 31, 2023		
10 people	40	20,2%
11 - 100 people	100	50,5%
101 - 200 people	30	15,2%
> 200 people	28	14,1%
V. Total capital of the enterprise as of December 31, 2023		
less than 3 billion VND	30	15,2%
To 3 - 20 billion VND	80	40,4%
greater than 20 - 100 billion VND	60	30,3%
> 100 billion VND	28	14,1%
Total revenue of the enterprise in 2023		
less than 3 billion VND	50	25,3%
To 3 - 50 billion VND	90	45,5%
To 50 - 200 billion VND	40	20,2%
> 200 billion VND	18	9,0%
TOTAL NUMBER OF BUSINESSES	198	100%

Source: Survey results from the dissertation.

Chapter 4

CURRENT STATUS OF INNOVATION SUPPORT IN REAL ESTATE ENTERPRISE IN HANOI AND RESULTS OF IMPACT ANALYSIS

4.1. CURRENT SITUATION OF INNOVATION SUPPORT FOR REAL ESTATE ENTERPRISES IN HANOI CITY

4.1.1. Current situation of the Central Government's support mechanism for innovation in enterprises

In recent years, based on the Party's guidelines and policies, the State has issued many important

documents at the levels of Laws, Decrees, and Decisions, contributing to supporting enterprises in accessing capital, technology, markets, and human resources, thereby promoting national science and technology development.

Table 4.1: Current legal framework on innovation in Vietnam

PUBLICATION DATE	LEGAL NORMATIVE DOCUMENTS
2016	<ul style="list-style-type: none"> - Resolution No. 35/NQ-CP dated May 16, 2016 on supporting and developing enterprises until 2020. - Decision No. 844/QD-TTg dated May 18, 2016 on approving the Project “Supporting the national innovation and startup ecosystem until 2025”
2017	<ul style="list-style-type: none"> - Law on Supporting Small and Medium-Sized Enterprises 2017
2018	<ul style="list-style-type: none"> - Government Decree No. 38/2018/ND-CP dated March 11, 2018, detailing investment in innovative start-up small and medium-sized enterprises. - Prime Minister's Decision No. 1851/QD-TTg dated December 27, 2018, approving the Project "Promoting the transfer, mastery, and development of technology from abroad into Vietnam in priority sectors and fields up to 2025, with orientation to 2030".
2019	<ul style="list-style-type: none"> - Resolution No. 50-NQ/TW dated August 20, 2019, of the Politburo on the orientation for perfecting institutions and policies, and improving the quality and effectiveness of foreign investment cooperation until 2030 - Resolution No. 52-NQ/TW dated September 27, 2019, on some guidelines and policies for proactively participating in the Fourth Industrial Revolution
2020	<ul style="list-style-type: none"> - Investment Law 2020 - Government Decision No. 749/QD-TTGg dated June 3, 2020, approving the “National Digital Transformation Program to 2025, with orientation to 2030”. - Government Decree No. 94/2020/ND-CP dated August 21, 2020, stipulating mechanisms and preferential policies for the National Innovation Center. - Prime Minister's Decision No. 2889/QD-TTg dated December 31, 2020, on the National Strategy for the Fourth Industrial Revolution.
2021	<ul style="list-style-type: none"> - Government Decree No. 31/2021/ND-CP dated March 26, 2021, detailing and guiding the implementation of several articles of the Investment Law. - Government Decree No. 80/2021/ND-CP dated August 26, 2021, detailing and guiding the implementation of several articles of the Law on Supporting Small and Medium-sized Enterprises (SMEs). - Prime Minister's Decision No. 157/QD-TTg dated February 1, 2021, on promulgating the National Product Development Program until 2030.
2022	<ul style="list-style-type: none"> - Decision 569/QD-TTg dated May 11, 2022, of the Prime Minister promulgating the Strategy for the Development of Science, Technology and Innovation until 2030. - Resolution 02/2022/NQ-CP of the Government on key tasks and solutions to improve the business environment and enhance national competitiveness in 2022.

Source: Compiled by the author

Besides perfecting the legal framework, the State has gradually strengthened the management system to more effectively support the innovation activities of enterprises. According to Decree No. 28/2023/ND-CP, the Ministry of Science and Technology is identified as the focal agency for state management of science, technology, and innovation, with the role of managing research and development of technology, intellectual property, standards - measurement - quality, and coordinating innovation programs and projects, thereby creating conditions for enterprises to access support policies.

Simultaneously, the National Innovation Center (NIC), established under Decision No. 1269/QD-TTg in 2019 and under the Ministry of Planning and Investment, plays a crucial role in developing the

innovation ecosystem. The NIC focuses on supporting enterprises through connecting resources, finance, human resource training, and promoting domestic and international cooperation. Furthermore, local innovation support organizations contribute to promoting innovation at the regional level. Overall, the innovation support system has yielded positive results, but increased coordination and resources are still needed to meet the demands of integration.

4.1.2. Current Status of Hanoi City Government's Support Mechanisms for Innovation in Businesses in General and Real Estate Enterprises in Particular

As a major economic center of the country, Hanoi identifies innovation as a key driving force for socio-economic development in the period 2020-2025, with a vision to 2030. This orientation is clearly reflected in the Resolution of the 17th City Party Congress, emphasizing the application of science and technology, digital transformation, administrative reform, and enhancing competitiveness, thereby creating a favorable environment for innovation activities of businesses, including real estate businesses. Based on this, Hanoi has issued many mechanisms and policies to support innovation and creative startups. Notably, Decision 4889/QĐ-UBND of 2019 on supporting innovative start-up businesses for the period 2019-2025 and Program 07-CTr/TU of 2021 identify science, technology, and innovation as the main drivers of growth. These orientations continue to be concretized through many plans and decisions implemented in the 2021-2022 period.

In practice, the city has implemented many programs to directly support businesses. During the 2015-2020 period, 31 businesses received funding for research and technological innovation; 1,216 businesses were guided in applying advanced management systems; and 52 collective trademarks received support for registration and protection. In 2022 alone, the city budget allocated over 10 billion VND to 6 research projects and 10 pilot production projects led by businesses. Simultaneously, Hanoi focused on developing an innovative startup ecosystem by connecting businesses with science and technology organizations, investment funds, and training institutions. In 2022, the city spent over 15 billion VND on tasks supporting startups and digital transformation; attracted 16 innovation investment funds; organized over 20 investment networking conferences; developed 32 business incubators; and implemented 16 training courses for 240 startups, contributing to the formation of a relatively synchronized innovation ecosystem in the capital city.

4.2. OVERVIEW OF THE HANOI REAL ESTATE MARKET AND INNOVATION ACTIVITIES IN THE REAL ESTATE SECTOR

4.2.1. Overview of the Hanoi Real Estate Market in the Period 2018-2025

The period 2018-2025 witnessed a significant shift in the Hanoi real estate market from expansionary growth to adjustment, screening, and recovery in a more cautious and substantive direction. The market was affected by a combination of macroeconomic factors, land and construction management policies, credit control, and large-scale urban infrastructure development, thereby changing the development space, product structure, and market behavior. The development of transportation and urban infrastructure, especially ring roads and suburban areas such as Gia Lam, Dong Anh, Hoai Duc, and Me Linh, became the main driving force for investment shifts. During the period 2018-2020, the supply of apartments was relatively stable; in the period 2021-2023, it decreased sharply due to legal obstacles and tightened credit; from 2024, the market began to recover with improved but selective supply. Real estate prices maintained a long-term upward trend, while liquidity recovered cautiously. In the context of deep differentiation, Hanoi real estate businesses face many challenges, creating an urgent need for innovation to adapt and develop sustainably.

4.2.2. Current status of innovation activities in real estate enterprises in Hanoi

In recent years, innovation activities of real estate enterprises in Hanoi have been quite evident, focusing on technology application, smart project development, and sustainable orientation. Many businesses have implemented project management software, 3D modeling, GIS, AI, and online sales platforms to optimize design, construction, and customer access. For example, Vinhomes has boosted online sales, allowing customers to experience 3D apartments and conduct transactions remotely, contributing to expanding its customer base among young people and international investors. In addition,

smart urban projects integrating IoT and centralized management systems are becoming increasingly popular in Hanoi.

Alongside the application of technology, many businesses are focusing on developing green and smart projects to meet sustainable development requirements. Developers such as Ecopark and Sunshine Group are applying green building standards, energy-saving solutions, and simulation and virtual reality technologies in their designs. Furthermore, international cooperation has become an important channel for businesses to access advanced technology and management experience. A prime example is the 128-hectare smart city project with a total investment of approximately US\$3.5 billion, involving a South Korean partner. Overall, innovation has contributed to enhancing the competitiveness, product quality, and adaptability of Hanoi's real estate businesses in an increasingly fragmented and competitive market.

4.3. RESULTS OF THE ANALYSIS OF THE IMPACT OF INNOVATION SUPPORT ON INNOVATION CAPACITY IN HANOI'S REAL ESTATE SECTOR BASED ON EXPERT INTERVIEWS AND BUSINESS SURVEYS

4.3.1. Results of qualitative research through expert and business interviews

Table 4.2: Summary of key findings from surveys of real estate experts and businesses regarding content groups supporting innovation.

Mechanisms to support innovation	Enterprises opinions	Expert opinion
Financial assistance	Difficulty accessing capital; cumbersome procedures; lack of priority due to the industry being assessed as risky.	The policy mechanism does not clearly categorize beneficiaries by industry; there is a lack of a credit guarantee mechanism.
Tax incentives	No guidance was provided; the cost of modernization was not recognized for tax exemption.	A simplified reporting mechanism is needed for small and micro-enterprises.
Support for R&D and technology transfer	Lack of information linking with institutions/universities; high transfer costs.	A fund needs to be established to support technology transfer and encourage public-private partnerships.
Support for innovation human resource training and development.	It is difficult to recruit qualified personnel; existing training does not meet actual needs.	There should be training programs tailored to the specific needs of businesses.
Intellectual property protection	Registration is difficult; the process is complicated; there is a lack of information and advice.	The intellectual property registration procedure needs improvement for non-traditional innovation models.

Source: Expert and business interview data from the dissertation, 2024

Overall, experts believe that in the last ten years, the State and Hanoi's innovation support policy system has improved significantly, with an increase in programs and regulatory documents. However, the real estate sector has not been identified as a focus in the innovation strategy, making it difficult for real estate businesses, especially small and medium-sized enterprises (SMEs), to access and benefit from policies. Current financial support mechanisms and tax incentives are not suitable for the long-term investment, large capital scale, and high risk of innovation in real estate, especially non-technological innovation. In addition, businesses face limitations in accessing R&D and technology transfer due to a lack of co-financing mechanisms and connection channels with research institutes and universities. The procedures for protecting intellectual property rights for digital platforms and new service models remain complex, reducing the incentive to invest in innovation. At the same time, the quality of human resources and training programs does not adequately meet the practical needs of real estate businesses. Essentially, a significant gap still exists between policy

design and implementation effectiveness, highlighting the need to refine innovation support mechanisms tailored to specific sectors and strengthen ecosystem linkages in Hanoi.

4.3.2. Results of testing the impact of innovation support on innovation capacity in real estate enterprises in Hanoi through enterprise surveys

4.3.2.1. Results of testing the scale of quantitative research

The reliability and measurement validity of the independent variables were tested through exploratory factor analysis (EFA) and Cronbach's alpha coefficient. Factor analysis with Varimax rotation identified five main factors, with a total explained variance of 72.93%. All scales had Cronbach's alpha coefficients greater than 0.7, indicating good reliability. Cronbach's alpha values ranged from 0.773 for the "Support for training and human resource development" group to 0.857 for the "Support for intellectual property protection" group.

Table 4.3: Exploratory Factor Analysis (EFA) and Cronbach's α Reliability

Factor	EFA					Cronbach's α
	1	2	3	4	5	
Financial assistance (HTTC)						
HTTC1	0,833					0,810
HTTC2	0,818					
HTTC3	0,784					
Tax incentives (UDT)						
UDT1		0,895				0,775
UDT2		0,828				
UDT3		0,718				
Support for research and technology transfer. (NCCG)						
NCCG1			0,818			0,791
NCCG2			0,809			
NCCG3			0,778			
Support for training and human resource development. (DTNNL)						
DTNNL1				0,848		0,773
DTNNL2				0,832		
DTNNL3				0,743		
Support for the protection of intellectual property rights. (BHQSH)						
BHQSH1					0,871	0,857
BHQSH2					0,861	
BHQSH3					0,854	

Source: Results of survey data analysis (2024)

4.3.2.2. Descriptive Statistics on the Impact of Innovation Support on the Innovation Capacity of Real Estate Enterprises in Hanoi

Descriptive statistics from a survey of 198 real estate enterprises in Hanoi show that innovation support groups are generally rated positively by enterprises, with average values ranging from 3.19 to 3.94.

(i) Financial support is rated as having a favorable impact, with average values ranging from 3.63 to 3.79. Financial support is considered an important input resource helping enterprises implement

innovation projects. However, the relatively high standard error reflects significant differentiation among enterprises in their ability to access capital, indicating that the financial support system is not yet truly inclusive.

(ii) Tax incentives received lower ratings (3.19-3.40), indicating limited effectiveness in encouraging innovation, particularly because current policies are not well-suited to the common non-technological innovation in the real estate sector.

(iii) Support for research and technology transfer averaged between 3.44 and 3.56, reflecting a positive role in enhancing the capacity to adopt and apply technology, especially digital solutions and PropTech. However, a gap still exists between the supply of technology and the absorption capacity of businesses.

(iv) Support for training and human resource development was also positively rated (3.36-3.65), but the relevance of training content was not uniform across businesses.

(v) Support for intellectual property protection is the highest-rated group (3.78-3.94), showing clear effectiveness in protecting creative results and promoting the development of new products and services.

Table 4.4: Descriptive statistics of variables related to innovation support in the research model

Encryption	Explain the variable	Number of observations	Average value	Standard error
HTTC1	Businesses have easy access to financial support programs from the government.	198	3,72	1,214
HTTC2	Financial support helps businesses implement innovative projects.	198	3,79	0,953
HTTC3	Government financial policies create incentives for businesses to invest in R&D	198	3,63	1,081
UDT1	Tax incentives encourage businesses to invest in innovation	198	3,40	1,075
UDT2	Businesses directly benefit from tax incentives when implementing innovative projects.	198	3,36	0,987
UDT3	The government's tax policies help reduce the financial burden and create favorable conditions for innovation.	198	3,19	1,052
NCCG1	Businesses have easy access to state-funded programs supporting scientific and technological research.	198	3,50	0,798
NCCG2	Government support programs help increase the ability of businesses to apply new technologies.	198	3,44	0,915
NCCG3	Policies on science and technology transfer contribute to enhancing the innovation capacity of businesses.	198	3,56	0,827
DTNNL1	State-sponsored training programs meet the need for skill enhancement among employees in businesses.	198	3,36	1,126
DTNNL2	Policies supporting human resource training help enhance creativity within businesses.	198	3,51	1,011
DTNNL3	Businesses regularly participate in training programs and workshops organized by the government.	198	3,65	0,905
BHQSH1	Businesses receive support from the State in the process of registering intellectual property rights.	198	3,94	0,769
BHQSH2	Intellectual property protection policies provide an incentive for businesses to develop new products and services.	198	3,91	0,842
BHQSH3	Policies related to intellectual property help businesses protect their creative achievements and enhance their competitiveness.	198	3,78	0,877

Source: Results of survey data analysis (2024)

4.3.2.3. Descriptive Statistics on Innovation Capacity of Real Estate Enterprises in Hanoi

The survey results of 198 enterprises show that the level of awareness and investment in innovation is generally quite positive, with the average values of the variables ranging from 3.38 to 3.77, but the level of implementation among enterprises is still uneven. Regarding innovation strategy, the average value reached 3.51, indicating that most enterprises have developed strategies related to innovation and have a certain level of communication within the organization. However, the relatively high standard error reflects significant differences between enterprises, especially the group of small and medium-sized enterprises, in building and implementing systematic strategies. Innovation culture is the aspect rated lowest (3.38), indicating that core values such as creativity, quality, and productivity are not implemented uniformly, reflecting limitations in the innovation-encouraging environment in many enterprises.

Conversely, innovation human resources are a prominent strength, with the highest average value (3.77). This result shows that the workforce in real estate businesses in Hanoi is considered dynamic and has creative potential, although there is still a disparity between large and small businesses in their ability to utilize this resource. Financial capacity for innovation is quite high (3.72), reflecting the willingness to invest in R&D and innovation, but small and medium-sized enterprises still face difficulties in allocating long-term resources.

Table 4.5: Descriptive statistics of innovation capabilities of real estate enterprises in Hanoi

Encryption	Explain the variable	Number of observations	Average value	Standard error
DMST1	Our company has a written innovation strategy, and this strategy has been communicated and understood by the relevant departments.	198	3,51	1,036
DMST2	Core values such as innovation, productivity, quality, and customer satisfaction are always shared and implemented within our company.	198	3,38	1,019
DMST3	Our company's staff is dynamic, creative, and full of new ideas.	198	3,77	1,120
DMST4	Our company has sufficient financial resources for R&D and innovation activities.	198	3,72	1,080

Source: Results of survey data analysis (2024)

4.3.2.4. Results of Hypothesis Testing on the Impact of Innovation Support on the Innovation Capacity of Real Estate Enterprises in Hanoi

The results of the multiple linear regression show that the research model has a very high degree of fit and explanatory power. Specifically, the R^2 coefficient reached 0.928 and the adjusted R^2 reached 0.926, implying that 92.8% of the variation in the innovation capacity of real estate enterprises in Hanoi is explained by five groups of innovation support: financial support, tax incentives, research and technology transfer support, training and human resource development support, and intellectual property protection support. The standard error of the estimate is low (0.24427), indicating that the model has high stability and a high degree of fit with the survey data. The ANOVA test recorded an F value of 494,190 with a p-value of 0.000, confirming that the regression model is statistically significant and suitable for analyzing empirical relationships.

Table 4.6: Overview of the multiple linear regression model

Statistical modeling	Value
R	0,963
R Square (R^2)	0,928
Adjusted R Square	0,926
Standard error of estimation	0,24427

Source: Results of survey data analysis (2024)

Table 4.7: ANOVA test of the regression model

Ingredient	Sum of	Degrees of	mean square	Value F	Sig. (p-
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	squares	freedom (df)			value)
Regression	147,440	5	29,488	494,190	0,000
residual	11,457	192	0,060		
Total	158,896	197			

Source: Results of survey data analysis (2024)

The estimation results show that all five innovation support groups have a positive and statistically significant impact on the innovation capacity of real estate enterprises ($p < 0.001$). Financial support has the strongest impact (Beta = 0.396), reflecting the central role of financial resources in R&D implementation, technology application, and process innovation. This is followed by tax incentives (Beta = 0.315), support for training and human resource development (Beta = 0.303), and support for research and technology transfer (Beta = 0.301), demonstrating the importance of reducing investment costs, enhancing human capacity, and the ability to absorb technology. Support for intellectual property protection, although having a lower impact (Beta = 0.260), still plays a crucial role in creating a safe innovation environment and encouraging investment in intellectual property assets. Overall, the results affirm the constructive role of innovation support mechanisms in enhancing the innovation capacity of real estate enterprises in Hanoi.

Table 4.8: Regression coefficients of innovation support variables affecting the innovation capacity of real estate enterprises in Hanoi.

Independent variable	Unstandardized coefficients (B)	Standard error	Beta standardization	Value t	Sig. (p-value)
Constant	-2,613	0,135		-19,391	0,000
UDT	0,328	0,022	0,315***	15,217	0,000
HTTC	0,384	0,022	0,396***	17,533	0,000
NCCN	0,379	0,028	0,301***	13,499	0,000
BVQSH	0,319	0,026	0,260***	12,428	0,000
DTNNL	0,322	0,023	0,303***	14,103	0,000

*Symbol ***, **, * corresponding to the significance level P_value 1%; 5%; 10%*

Source: Results of survey data analysis (2024)

4.4. OVERALL ASSESSMENT OF THE IMPACT OF INNOVATION SUPPORT ON INNOVATION CAPACITY IN REAL ESTATE ENTERPRISES IN HANOI

4.4.1. Achievements

(i) Financial support and tax incentives play a fundamental role in promoting innovation in real estate enterprises.

(ii) Support for research, application, and technology transfer has yielded many positive results.

(iii) Development of innovation human resources has been emphasized.

(iv) Support for the protection and development of intellectual property contributes to creating a safe innovation environment.

(v) The innovation ecosystem is gradually forming and expanding.

4.4.2. Existing Limitations

(i) Support mechanisms are not yet sufficiently synchronized, consistent, and long-term; (i) Many policies are fragmented, access procedures are complex, and transparency is lacking, reducing the ability of real estate businesses to absorb support.

(ii) The legal framework and administrative procedures in the fields of land, construction, and planning are cumbersome and inflexible, slowing down the implementation of innovation initiatives and increasing risks for businesses.

(iii) Linkages within the innovation ecosystem are weak, especially between real estate businesses and research institutes, universities, and financial institutions, limiting the ability to transfer and commercialize technology.

(iv) Financial resources for innovation are limited, with Hanoi's innovation budget accounting for only about 0.52% of GRDP, much lower than Bangkok (1.2%) and Kuala Lumpur (1.6%).

(v) Technological infrastructure and innovation support centers have not been invested in comprehensively; (vi) The Hoa Lac High-Tech Park still has many limitations in technical infrastructure, affecting its ability to attract and develop businesses.

(vi) Coordination among management agencies is still lacking, leading to overlapping policies and prolonged approval times, reducing the effectiveness of innovation support implementation.

(vii) Awareness of the role of innovation among a segment of real estate businesses, especially small and medium-sized enterprises, is still limited, leading to a hesitant attitude towards R&D investment and ineffective utilization of support policies.

Chapter 5

ORIENTATION AND SOLUTIONS TO SUPPORT INNOVATION IN REAL ESTATE ENTERPRISES IN HANOI

5.1. OBJECTIVES AND DEVELOPMENT ORIENTATIONS OF THE VIETNAMESE REAL ESTATE MARKET IN GENERAL AND HANOI CITY IN PARTICULAR

5.1.1. Objectives and Development Orientations of the Vietnamese Real Estate Market

The objectives and development orientations of the Vietnamese real estate market in the coming period are established on the basis of new laws such as the Housing Law 2023, the Real Estate Business Law 2023, and the Government's operational resolutions, aiming to build a transparent, stable, modern, and sustainably developing real estate market. Real estate development orientations are closely linked to sustainable urban planning, environmental protection, and the development of green and smart urban areas. The State also focuses on promoting digital transformation in real estate management and transactions through the digitization of land data, the application of AI and IoT, while strengthening supervision and risk prevention to control speculation and price manipulation and ensure the long-term stability of the market.

5.1.2. Objectives and Development Directions of the Hanoi City Real Estate Market

In Hanoi City, the objectives of real estate market development are concretized towards unlocking resources, improving the efficiency of state management, and promoting sustainable and civilized urban development. In terms of direction, Hanoi prioritizes perfecting mechanisms, policies, and land use planning that are consistent with practical needs and long-term development directions; developing all segments evenly, with an emphasis on social housing and housing for low-income people, while promoting modern, high-quality urban projects. Investment in transportation and urban infrastructure is considered a key driver, with a focus on ring roads, urban railways, and synchronized technical infrastructure. In addition, Hanoi is promoting the application of digital technology in real estate management, supporting businesses and citizens through preferential credit, reforming administrative procedures, and strengthening market supervision to prevent risks.

5.2. DIRECTIONS FOR SUPPORTING INNOVATION IN REAL ESTATE ENTERPRISES IN HANOI

(i) Strengthening financial and credit support should be considered a fundamental direction to remove the biggest barriers to innovation.

(ii) Improving and strengthening the protection of intellectual property rights to ensure the legitimate interests of businesses in the innovation process.

(iii) Promote linkages between real estate businesses and research institutes, universities, and intermediary institutions in the innovation ecosystem.

(iv) Develop innovative human resources by promoting in-depth training programs linked to industry practices, combining professional knowledge and creative skills.

(v) Build an internal environment that encourages experimentation, acceptance of controlled risks, and promotes the application of digital technology in management and operations.

5.3. SOLUTIONS TO SUPPORT INNOVATION FOR REAL ESTATE ENTERPRISES IN HANOI

5.3.1. Group of support solutions from central government agencies and the Hanoi city government

First, establish a specialized venture capital fund for innovation in the real estate sector.

Secondly, synchronize and increase transparency in tax incentives and administrative procedures. A "Real Estate Innovation Support Portal" should be developed – a digital platform integrating all information and processes related to tax incentives, R&D support, financial funds, and intellectual property procedures.

Thirdly, implement a "Regulatory Sandbox" mechanism for the real estate sector.

Fourthly, develop data infrastructure and build a public data platform. The city needs to establish a Hanoi Real Estate Open Data Warehouse, integrating data on planning, land prices, transactions,

construction permits, and urban infrastructure.

Fifthly, support digital skills training and PropTech technology for real estate industry personnel.

Sixthly, strengthen intellectual property protection mechanisms for the real estate innovation ecosystem. The key solutions include establishing a specialized real estate intellectual property task force, supporting the costs of initial intellectual property registration, shortening the examination time to 6-9 months, and strengthening sanctions for violations.

5.3.2. Solutions to enhance internal innovation capacity and promote cooperation at the enterprise level

First, strengthen the foundation of internal innovation through a stable financial mechanism. Real estate enterprises in Hanoi need to establish an internal R&D fund with a regularly allocated budget, equivalent to at least 1% of total annual revenue, to maintain research, testing, and application of new technologies.

Second, build a corporate culture that encourages creativity and experimentation. Enterprises need to implement "internal innovation idea" programs periodically, creating conditions for employees to propose and test initiatives on an appropriate scale.

Third, enhance the digital and technological capabilities of the workforce. Businesses need to allocate a stable budget for training and retraining, focusing on key skills.

Fourth, establish a dedicated R&D or innovation department to organize innovation activities. This department will be responsible for monitoring technology trends, implementing pilot projects, collaborating with startups and research institutions, and evaluating and scaling up effective solutions.

Fifth, strengthen cooperation within the innovation ecosystem. Businesses need to expand cooperation with...

CONCLUSION

Innovation is increasingly playing a central role in enhancing the competitiveness and promoting sustainable development of real estate businesses in Hanoi, in the context of an economy strongly impacted by digital transformation, the demand for green growth, and the rapid fluctuations of the market. Over the past period, support mechanisms from the central government and Hanoi city have created an important foundation to help businesses minimize risks, access resources more easily, and gradually promote the application of technology.

Financial support policies, tax incentives, and the Science and Technology Development Fund have contributed to improving access to capital for innovation activities, especially for small and medium-sized enterprises. Support for research, application, and technology transfer has yielded concrete results, demonstrated by the deployment of over 200 new technologies in 2022 and the application of BIM models in many key real estate projects. The human resources for innovation have been strengthened through training programs, incubators, and mentoring networks, along with internal training models at several large corporations. In addition, intellectual property protection has been gradually improved, contributing to the creation of a stable legal environment for innovation. Hanoi has also formed an innovation support ecosystem with the participation of research institutes, intermediary organizations, investment funds, and over 1,000 technology startups related to the real estate sector.

However, the innovation support system still has certain limitations. Support mechanisms are fragmented, procedures for accessing resources are complex, and the legal environment in the land and construction sectors is not flexible enough. The city's investment in innovation only reaches about 0.52% of GRDP, while the linkages between businesses, research institutes, and financial institutions remain weak.

Based on this, the dissertation proposes three key groups of solutions: (i) improving the state support mechanism to enhance policy consistency and effectiveness; (ii) strengthening innovation capacity at the enterprise level through internal development and open cooperation; and (iii) long-term strategic orientation to make innovation an integral component of corporate governance. The synchronized implementation of these solutions will contribute to the formation of a genuine and sustainable innovation ecosystem for real estate enterprises in Hanoi.

**LIST OF PUBLISHED RESEARCH WORKS BY THE AUTHOR RELATED
TO THE DISSERTATION**

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