INNOVATION IN VIETNAMESE ENTERPRISES UNDER INTERNATIONAL INTEGRATION: CHALLENGES AHEAD

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Received: 13/01/2026; Reviewed: 3/3/2026; Revised: 13/3/2026; Accepted: 7/5/2026
DOI: *https://doi.org/10.58902/nckhpt.e-v2i1.348*

Abstract: *In the context of globalization and deep international integration, innovation has become a decisive factor in enhancing the competitiveness and sustainable development of Vietnamese enterprises. This paper examines innovation from both theoretical and practical perspectives and identifies the major challenges confronting Vietnamese firms today. The study reviews key concepts and types of innovation, then analyzes representative cases, including VNG, Vingroup (VinFast, VinAI, and VinBigData), and MoMo, to clarify how Vietnamese enterprises are pursuing innovation through digital transformation, artificial intelligence, platform development, and data-driven business models. The findings show that a number of firms have made notable progress in product innovation, organizational restructuring, digital infrastructure investment, and ecosystem building. At the same time, innovation remains constrained by shortages of high-quality human resources, limited financing for research and development, weak organizational readiness, institutional and regulatory bottlenecks, uneven digital infrastructure, and intense international competition. To address these challenges, the paper proposes two sets of policy implications: enterprise-level strategies centered on long-term innovation capability and digital upgrading, and state-level measures aimed at improving the policy environment, digital infrastructure, financing mechanisms, and human resource development. Overall, innovation is not only an inevitable path for Vietnamese enterprises in the digital era but also a major driver of national competitiveness in the global knowledge economy.*

Keywords: *Enterprises; Innovation; Challenges; International integration.*

1. Introduction

In the context of increasingly extensive globalization and international integration, innovation has become a vital factor enabling enterprises to enhance competitiveness, pursue sustainable development, and adapt to rapid changes in the global market. For Vietnamese enterprises, competitive pressure from foreign firms, together with the requirement to comply with international standards in quality, technology, and governance, poses substantial challenges to the promotion of innovation. Although many enterprises have initially implemented innovation activities, limitations remain in high-quality human resources, technological capability, support mechanisms, and corporate culture. These constraints affect the effectiveness of innovation and the ability of enterprises to compete internationally. Therefore, it is necessary to study the current situation, identify the challenges, and propose solutions to improve the innovation capacity of Vietnamese enterprises, thereby contributing to the establishment of a solid foundation for socioeconomic development in the period of integration.

2. Research overview

Luong Ngoc Minh et al. (2024), in "Digital transformation in Vietnam: A case study of Hanoi SMEs," surveyed 456 small and medium-sized enterprises (SMEs) in Hanoi. The study examined the current status of digital transformation in enterprises and the factors affecting this process through two mechanisms: direct effects and indirect effects through the mediating variable of digital transformation intention. Using structural equation modeling (SEM), the study identified six main factors influencing digital transformation, primarily through the formation of digital transformation

intention rather than through direct effects on implementation procedures. This work provides a quantitative investigation of innovation among Vietnamese enterprises in the context of digital transformation, an inevitable development trend for enterprises today.

Do Thi My Trang et al. (2025), in "Strategic insights from senior management in implementing digital transformation in Vietnamese SMEs," conducted qualitative interviews with senior managers of SMEs in Vietnam. The findings demonstrate the strong role of leadership awareness in digital transformation. SMEs tend to prioritize phased implementation plans and adapt organizational culture and structures to ensure successful transformation. However, SME leaders are often cautious about financial and operational risks and prefer a phased, context-sensitive approach. The perceptions of senior managers play a crucial role in the success of innovation. This study qualitatively examines the role of Vietnamese business managers in terms of awareness, implementation, and the difficulties associated with innovation in contemporary digital transformation.

The Oslo Manual (OECD/Eurostat, 2018) provides a conceptual framework, definitions, and statistical methods for measuring innovation activities in enterprises, including types of innovation, such as product, process, marketing, and organizational innovation; methods for collecting innovation survey data; and indicators and methods for analyzing innovation data.

Overall, these studies have addressed theoretical issues and have conducted quantitative and qualitative research on innovation and enterprise challenges from different perspectives. They provide important references for the present study, which examines the issue from the perspectives of both enterprises and the government. However, the theoretical dimensions of innovation, including definitions, types of innovation, and enterprise challenges in the context of international integration, have not been sufficiently clarified in the existing literature. This gap constitutes the contribution of the present paper, which analyzes the issue from both theoretical and practical perspectives.

3. Research methods

This paper employs data collection based on digital data platforms, analysis, comparison, synthesis, and generalization. On this basis, the author develops a perspective on enterprise innovation in the context of international integration; evaluates its current situation, outcomes, and challenges; and proposes solutions for promoting enterprise innovation in the context of international integration.

In assessing the current state of innovation among Vietnamese enterprises, the paper focuses only on a number of pioneering enterprises in this area, especially enterprises applying technologies associated with Industry 4.0, including digital technologies, artificial intelligence, and big data.

4. Research results

4.1. Theoretical foundations of enterprise innovation and emerging challenges

4.1.1. Perspectives on enterprise innovation and its main types

Perspectives on enterprise innovation

The Oslo Manual defines innovation as "the implementation of a new or significantly improved product (good or service), process, marketing method, or organizational method in business practices, workplace organization, or external relations" (OECD/Eurostat, 2018).

According to UNESCO (2021), innovation is the process of designing, developing, and implementing new or improved products, services, or processes in order to promote economic growth, sustainable development, and improvements in quality of life.

UNESCO emphasizes that innovation is not limited to science and technology but also encompasses social, cultural, educational, and governance domains. It is a key factor in promoting sustainable development, reducing poverty, strengthening competitiveness, and advancing social progress.

According to Peter F. Drucker (1985), a prominent management theorist, innovation is the specific instrument of entrepreneurship. It is the act of creating new resources or improving the performance of existing resources in order to create new value.

Joseph Schumpeter, the Austrian economist

who initiated innovation theory, argued that innovation is a process of "creative destruction," in which old products, services, or business models are replaced by new ones, thereby promoting growth and productivity (Schumpeter, 1911/1934).

On the basis of these perspectives, this paper understands enterprise innovation in international integration as the process through which enterprises transform knowledge and new ideas into practical values, including products, services, processes, or business models, in order to meet strict standards, intense competition, and the continuous changes of the global market.

Innovation, therefore, does not simply mean that an enterprise introduces a new product, whether a good or a service. The product must also be competitive in the international market.

Main types of enterprise innovation

This paper discusses three types of enterprise innovation. In practice, depending on their capabilities, enterprises may implement innovation in specific aspects of one type or across all three types.

Product innovation in enterprises

New product development refers to the creation of a product that is entirely new compared with the existing product portfolio.

Such products may be the first of their kind on the market, representing breakthrough innovation, or may expand into a new market segment. For example, Vingroup developed VinFast electric vehicles, while FPT developed artificial intelligence software.

Improvement of existing products involves upgrading technology, functions, materials, and design. Its objectives are to enhance customer experience and extend the product life cycle. Examples include improvements to mobile phones, televisions, software, and household appliances.

Product adjustment according to market demand involves adapting products to specific customer segments and geographical regions. This is especially important in a globalized and digitalized market.

The application of new technologies to products involves the use of AI, IoT, big data, blockchain, and related technologies in product development, thereby creating smart, digitalized, and environmentally friendly products.

Innovation in design and packaging enhances aesthetics, convenience, and user experience and is closely linked to brand strategy and product positioning.

Innovation in business production processes and enterprise strategy

Production process innovation refers to the adoption of new production or distribution methods, or the substantial improvement of existing methods, in order to increase operational efficiency, reduce costs, and improve the quality of products or services.

Process innovation may include the application of automation technologies, advanced management systems such as ERP, AI, and IoT, the restructuring of production lines, or changes in customer access and distribution methods. This is an important factor enabling enterprises to increase productivity, enhance competitiveness, and adapt to market fluctuations.

Marketing innovation is the process through which enterprises adopt new or substantially improved methods in market access, brand communication, product or service distribution, or customer interaction, with the aim of improving marketing effectiveness, increasing customer value, and creating competitive advantage.

Marketing innovation involves the implementation of new marketing strategies not previously used within the enterprise, including changes in product and packaging design, pricing strategy, distribution channels, and brand communication and promotion activities.

Enterprises may use AI to personalize advertising content, deploy chatbots for automated customer service, and use augmented reality or virtual reality to create product experiences.

In addition, enterprises may adopt interactive marketing, livestream selling, game marketing, and social media communication campaigns. Instead of merely promoting products, enterprises can create digital content that conveys brand stories and values through blogs, videos, podcasts, and related media formats.

Innovation in strategic management involves

new positioning strategies and changes in brand messaging to align with sustainable, green, and humanistic consumption trends. It also requires flexible thinking and adaptability to change, readiness to adjust strategies when circumstances shift, and orientation toward sustainable development by balancing economic efficiency, social responsibility, and environmental protection.

Organizational innovation in enterprises

Innovation in organizational structure and models involves streamlining the apparatus, reducing intermediate management layers, and eliminating unnecessary stages. It also involves transforming organizational models from traditional forms to more flexible models, such as matrix structures, flat organizations, project-based teams, or network organizations.

Innovation in workflows and internal coordination includes automation and digitalization of processes through technology to increase performance; stronger connections among departments to reduce fragmentation and promote information sharing; and the use of modern collaboration tools such as Slack, Trello, and Microsoft Teams.

Innovation in management methods involves strengthening decentralization and granting greater autonomy to departments or individuals in order to improve initiative and task-handling efficiency. It also involves the application of technology in management, such as ERP, CRM, HRM, and knowledge management systems.

Enterprises need to govern based on data and make decisions on the basis of data. They should shift from traditional enterprise management to flexible management, emphasizing adaptability, rapid feedback, and multidirectional collaboration.

Innovation in corporate culture involves building an innovation-oriented culture, encouraging creativity, accepting risk, and being ready to change. It promotes teamwork and knowledge sharing through an open, cooperative, and mutually supportive culture. It also emphasizes human values by placing people at the center of all innovation activities.

Innovation in human resource development strategy involves retraining and upskilling, especially in digital technologies, data analysis, and strategic thinking. It also includes attracting talent, building an attractive and flexible working environment with development opportunities, and shifting the human resource management mindset from "management" to "engagement and development."

4.1.2. Perspectives on the challenges facing enterprises in innovation

First, the challenges of enterprise innovation are difficulties, barriers, or obstacles that enterprises encounter in creating, applying, and implementing new ideas, technologies, and business models to enhance competitiveness and achieve sustainable development.

These challenges may stem from internal factors, such as limitations in human resources, investment capital, innovation culture, and management capacity, as well as external factors, such as global competitive pressure, rapid technological change, market demand, and policy and legal conditions.

Second, challenges in innovation are factors that hinder or limit the ability to develop and apply new ideas, new technologies, and new management models in production and business activities. These challenges arise from within enterprises, the business environment, and the context of international integration.

In other words, innovation is an inevitable yet risky process. Enterprises must accept large investment costs, a high likelihood of failure, and long payback periods. Therefore, the challenges of enterprise innovation are difficult problems that enterprises need to overcome in order to transform innovative ideas into practical value and generate socioeconomic benefits.

4.2. The current state of innovation in selected Vietnamese enterprises

4.2.1. Selected leading enterprises in innovation

VNG Corporation

VNG Corporation operates in information technology, digital content, social networks, e-commerce, cloud services, and digital finance. VNG is Vietnam's first technology "unicorn," with a valuation of more than USD 1 billion.

The innovation process

Initial stage (2004–2010): VNG began as an online game publisher, with its first product

being "Vo Lam Truyen Ky." By capturing the internet trend at an early stage, VNG quickly became a leading game enterprise in Vietnam. However, instead of stopping at gaming, the company proactively restructured its business model and oriented itself toward becoming a comprehensive technology company.

Expansion and innovation stage (2010–2020): VNG renewed its business strategy and shifted from a "game company" to a "multi-sector technology enterprise." VNG introduced a number of strategic products, including:

Zalo (2012): A "Make in Vietnam" messaging application, which currently has more than 75 million domestic users.

ZaloPay: An e-wallet integrated into the VNG ecosystem.

Zing MP3 and Zing News: Leading digital content platforms in Vietnam.

VNG promoted technological innovation by investing in AI, cloud computing through VNG Cloud, big data, and cybersecurity.

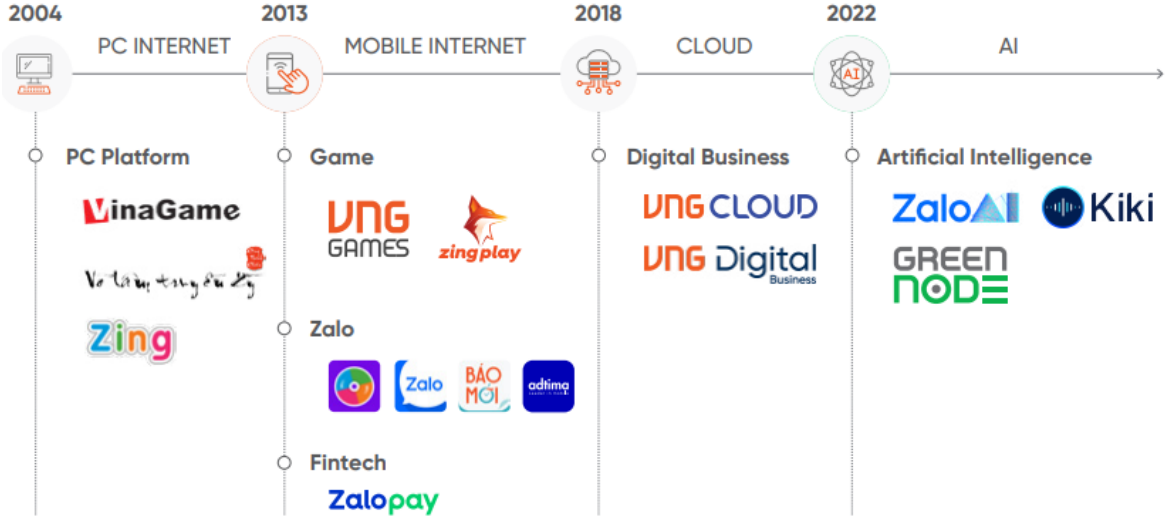
International integration stage (2020–present): VNG became the first Vietnamese technology enterprise to prepare for listing on the U.S. stock exchange NASDAQ. VNG has expanded international cooperation in AI, cloud, and fintech.

VNG has developed its "VNG Digital Ecosystem," a comprehensive digital ecosystem comprising communication and social networks (Zalo), digital payment and finance (ZaloPay), cloud services (VNG Cloud), and entertainment and digital content (Zing MP3, Zing TV, 123 Phim, and Zing News).

Business results achieved by VNG

VNG's revenue has grown steadily at more than 20% per year. Zalo has become the only domestic platform capable of competing with international Big Tech companies in Vietnam. VNG has also helped stimulate the development of Vietnam's technology startup ecosystem.

Figure 1. VNG's development process across stages



Source: VNG Corporation, Annual Report 2024 (corp.vcdn.vn).

VNG is currently undergoing a major transformation, moving from a domestic technology company to a national technology leader with international ambitions, with innovation in AI, cloud, and fintech as its core focus. However, this journey is not simple because the company faces a range of internal and external barriers.

Vingroup (VinFast, VinAI, and VinBigData)

Vingroup operates mainly in real estate, industry, technology, healthcare, education, and smart transportation. Vingroup has transformed its model from a real estate and service group into an industrial and technology group that places innovation at the center.

VinFast - Industry and green transportation

VinFast, Vietnam's first electric vehicle manufacturer, has made major investments in research and development (R&D), battery technology, and artificial intelligence. VinFast

aims to become a global electric vehicle manufacturer and a pioneer in green transportation.

VinFast has invested heavily in R&D and has R&D centers in Vietnam, the United States, Germany, and Australia. The enterprise applies AI, IoT, big data, and next-generation battery technologies through cooperation with partners such as CATL and StoreDot. VinFast develops smart electric vehicles integrated with virtual assistants, over-the-air software updates, and autonomous driving features.

VinFast's business results include exports of electric vehicles to the United States, Canada, and Europe in 2023–2024. In 2023, VinFast was successfully listed on NASDAQ in the United States. VinFast has placed Vietnam among the countries capable of producing electric vehicles globally.

VinAI - Artificial intelligence and machine learning

VinAI was established in 2019 and focuses on computer vision, deep learning, and AI for autonomous vehicles. It is among the few AI research centers in Southeast Asia with internationally published research outputs.

VinAI has developed products such as AI-based driver monitoring systems; facial recognition (FaceID) and smart security solutions for automobiles and smart buildings; and AI applications in healthcare and education.

VinAI's business and research achievements include its position among the top 20 AI research centers in Southeast Asia. It has published research at prestigious global AI conferences such as NeurIPS, CVPR, and ICML and cooperates internationally with NVIDIA, Google, and several major universities.

VinBigData - Big data and biomedical technology

VinBigData operates in data science, biomedicine, and digital transformation. It has built the first Vietnamese human genome database through the "One Million Vietnamese Genomes" project. VinBigData applies AI and big data to diagnostic imaging, medical testing, and smart education. The company has also developed DrAid™, an artificial intelligence-based diagnostic support system.

VinBigData's achievements include DrAid™ being approved by the U.S. Food and Drug Administration for clinical trials. The Vietnamese genome database contributes to precision medicine and personalized treatment and is regarded as a pioneering biomedical data platform in Southeast Asia.

MoMo (M_Service Joint Stock Company)

MoMo operates in fintech and electronic payment. It has pioneered the application of blockchain technology and big data in electronic payments. MoMo integrates hundreds of services into a single application, including bill payment, ticket purchases, top-ups, transfers, and small-scale financial investment. The company has also developed the MoMo Innovation Center to incubate startups and cooperate with small enterprises in the fintech ecosystem. The company's formation and innovation process can be divided into the following stages.

Stage 1: Initial development and mobile technology application (2007–2014)

MoMo began with a mobile money transfer model when fintech was still a very new concept in Vietnam. It was the first Vietnamese enterprise licensed by the State Bank of Vietnam as a payment intermediary. The company invested heavily in secure technologies, electronic transaction processing systems, and modern payment infrastructure.

Stage 2: Development and ecosystem expansion (2015–2020)

The company launched the MoMo e-wallet application on smartphones. MoMo applied big data and artificial intelligence to personalize user experience and integrated more than 400 payment services, including electricity, water, internet, tuition, and insurance payments; cinema, train, and bus ticket purchases; mobile phone top-ups; charitable donations; and cooperation with more than 50 banks and thousands of e-commerce partners.

MoMo's "financial super app" strategy allows users to make payments, save, invest, and purchase insurance through a single platform.

Stage 3: Innovation and comprehensive digital transformation (2020–present)

MoMo applies big data analytics to predict customer behavior. It has also developed

microfinance features to help low-income users and small businesses access financial services. The company expanded by establishing the MoMo Innovation Center, which serves as an incubator for startups and a center for researching new technologies.

The company aims to become a "Financial Super App," a comprehensive financial application for Vietnamese users.

Major achievements and outcomes include more than 40 million MoMo users by 2024, making it the leading e-wallet in Vietnam. MoMo cooperates with more than 50 banks and has 140,000 payment acceptance points nationwide. The company has successfully raised more than USD 400 million from major funds, including Warburg Pincus, Mizuho Bank, Goodwater Capital, and KKR. It was also listed among the 50 most innovative companies in Asia by Fast Company in 2023 and was recognized as a representative e-wallet of the year at the Vietnam Digital Awards in 2022.

Lessons from innovation practices

The lesson from VNG is that innovation must be accompanied by a long-term strategic vision. The company has leveraged localized technology to create competitive advantages over foreign enterprises.

The lesson from Vingroup, including VinFast, VinAI, and VinBigData, is that innovation requires substantial investment and acceptance of initial risks. The linkage between research, production, and the market is a core factor in building national innovation capacity.

The lesson from MoMo is that success derives from a clear understanding of the domestic market combined with global technology. Its innovation model focuses on user experience and digitalized data.

4.2.2. Investment in innovation among Vietnamese enterprises

Scale and trends of R&D investment

According to "Vietnam emerges as Southeast Asia's rising hub for R&D innovation" (Rödl & Partner, 2025), Vietnam's R&D expenditure in 2023 accounted for 0.4% of GDP, ranking 66th globally. Although this level remains low compared with China at 2.5% and South Korea at 4.6%, positive changes have been observed. The private sector currently accounts for approximately 64% of total R&D investment, increasing from only 12% in 2015 (Tap chi Kinh te và Du bao, 2022).

FDI enterprises as leading actors and R&D centers

Samsung invested USD 220 million to build an R&D center in Hanoi focusing on AI, IoT, big data, and 5G, with approximately 3,000 engineers. Qualcomm, LG Electronics, Panasonic, and Toshiba are also operating or expanding R&D centers in Vietnam, with a focus on network technology, sensors, and semiconductors (Tap chi Kinh te và Du bao, 2022). NVIDIA established a major AI R&D center in Vietnam with 130 staff members, cooperates with more than 65 universities, and supports more than 100 AI startups through the NVIDIA Inception program (Phuc, 2024).

Applications of AI, big data, and IoT in enterprises

Vietnamese ICT enterprises are promoting research and applications of AI and big data to optimize productivity, automate production, manage large datasets, and operate energy systems. Many AI products developed by Vietnamese enterprises have received international awards and patents (Hanh, 2024). The number of AI engineers in Vietnam is estimated at approximately 10,000, and enterprises such as Viettel, FPT, CMC, and VNPT are leading the development of AI and IoT/5G infrastructure (VDSC, 2024).

Data infrastructure, IoT, and digital transformation

Vietnam currently has 33 data centers with a total capacity of 80 MW, concentrated in Hanoi and Ho Chi Minh City. The market reached USD 557 million in 2022 and is projected to continue growing at a compound annual growth rate (CAGR) of 10.8% through 2029 (Anh, 2024).

Enterprises such as Viettel, VNPT, FPT, CMC, and VNG are investing heavily in expanding data centers, IoT infrastructure, and 5G deployment. Viettel plans to build 11 data centers with a total capacity of 350 MW and cooperate with NVIDIA to deploy an AI ecosystem with hundreds of GPUs and supercomputers (Anh, 2024). Google is also

considering the construction of a large-scale data center in Vietnam, expected to operate from 2027, marking an important step in direct investment in Vietnam's digital infrastructure.

Government support policies

The government has issued a national AI strategy to 2030, with the objective of making Vietnam a leading AI center in ASEAN, along with a national digital transformation program to 2025 with a vision to 2030 to promote the application of AI, IoT, and big data in enterprises. Investment support policies include tax incentives, funds to support R&D costs, sandboxes for testing digital technology products, and professional training support for AI and semiconductor human resources, with an estimated target of 5,000 to 7,000 specialists by 2030.

Positive outcomes

A number of domestic corporations, domestic enterprises, and FDI enterprises have not only innovated in technology but have also changed their business models, management thinking, and product development toward data- and technology-centered approaches, thereby contributing to Vietnam's digital economy.

Growing awareness of innovation and digital transformation: Many Vietnamese enterprises, especially large enterprises such as FPT, Viettel, Vingroup, MoMo, and Tiki, have recognized the role of innovation and digital transformation in enhancing competitiveness in both domestic and international markets. Enterprises increasingly view innovation and digital transformation as both opportunities and challenges.

Stronger technology application: Enterprises have begun to apply AI, big data, IoT, blockchain, and cloud computing to management, production, and customer care.

Transformation of business models: Many enterprises and groups have shifted from traditional models to digital platforms, e-commerce, and digital services.

Development of supporting ecosystems: Programs such as the National Digital Transformation Program, Project 844, and the National Innovation Center (NIC) have created a favorable environment for enterprises to develop technology and creativity.

4.2.3. Challenges in innovation among Vietnamese enterprises

Internal challenges faced by enterprises

(1) Limitations in high-quality human resources, management methods, and corporate culture

The need for appropriate high-quality innovation human resources

Many Vietnamese enterprises lack personnel with deep expertise in R&D, digital technology, and innovation management. A shortage of high-quality digital human resources, including technology engineers, data specialists, and digital managers, limits the pace of transformation and innovation.

Human resources also remain weak in creative skills, innovative thinking, and the ability to apply advanced technologies, which makes it difficult to implement high-value innovation projects.

VNG Corporation emphasizes that "facing challenges" is part of its identity (Hung, 2025), but the recruitment of high-level personnel in AI, cloud, and big data remains a challenge in Vietnam.

Although Vingroup has strong financial capacity, high-level innovation in autonomous AI, big data, robotics, and IoT requires highly specialized personnel, strong R&D capabilities, and a creative ecosystem. Ensuring sufficient personnel of both quality and quantity, while maintaining innovation motivation rather than merely operating according to the existing model, also remains a challenge for the group.

Management methods and transformation of enterprise organizational models

Management methods and the transformation of organizational and business models must correspond to the pace of enterprise innovation in international integration. However, in many Vietnamese enterprises, this aspect often progresses slowly, remains stagnant, and is shaped by the mentality of "old experience." Even leading enterprises with certain achievements in innovation consider this a challenge.

As VNG expands across multiple areas, including games, social networking platforms such as Zalo, fintech, cloud, and AI, it becomes

difficult to link these areas, manage shared resources, and create synchronization and efficiency.

The company's annual report states that VNG has gone through several technological waves, from PC to mobile to cloud to AI. Transforming business methods in pursuing innovation requires strong changes in the company's organization, processes, culture, and systems. Moreover, each innovation area has a different life cycle and business model, making balance and appropriate prioritization a major challenge.

Vingroup operates across multiple fields, including electric vehicles (VinFast), technology (VinAI and VinBigData), real estate, services, and manufacturing. This creates ecosystem advantages but also creates major challenges in governance, linkage among business areas, and synchronization of innovation.

When a company experiments with multiple new directions simultaneously, prioritizing, allocating resources, and measuring effectiveness become more difficult.

The key challenge is to ensure that innovation units do not operate in isolation but are genuinely integrated into the group's strategy and generate synchronized value.

Corporate culture has not yet sufficiently promoted innovation

Many enterprises still maintain a conservative mentality and show limited willingness to take risks in creative experimentation. Their governance systems have not yet encouraged experimentation, learning from failure, or the development of new ideas.

For Vingroup, building an innovation culture characterized by experimentation and acceptable risk in a large, multi-sector, and traditionally structured enterprise is not easy and requires time to change organizational structures, processes, and employee mindsets.

VNG Chairman Le Hong Minh has affirmed that the corporate culture of innovation, including acceptance of failure and rapid experimentation, also needs further development. VNG has identified strong investment in new fields such as AI, cloud, and fintech, but these areas have not immediately generated substantial profits. Fintech, cloud, and AI remain promising fields that are still in the stage of proving financial effectiveness and therefore require patience and long-term investment (Hung, 2025). The 2024 audited report recorded that VNG achieved 22% year-on-year revenue growth but still posted a net loss of nearly VND 1.18 trillion (Ngo Huyen, 2025).

(2) Limited financial resources for R&D and slow access to and application of new technologies

Financial resources: SMEs account for the majority of enterprises but often lack capital for R&D and technology transfer. The financial system has not yet developed many products to support innovation, especially high-risk loans or venture capital funds. In addition, there is a gap between large and small enterprises. Large enterprises have stronger capacity to invest in digital transformation, while most SMEs face difficulties in capital, human resources, and technology.

Although Vingroup has considerable financial resources to invest in green transformation and high technology, VinFast has recorded very large losses in recent years, increasing risks for the entire Vingroup group. Investment in innovation, especially in the electric vehicle industry, AI, and big data, requires enormous capital and long payback periods. Meanwhile, market, investor, and shareholder pressure for short-term efficiency and profitability remains, creating tension between long-term innovation and the demand for immediate results.

Lack of a systematic and long-term strategy: Many enterprises have not yet developed an overall innovation and digital transformation strategy. They remain uncertain, follow trends, and lack clear objectives.

In its innovation process, MoMo faces the challenge of balancing user growth and profitability. As services expand, including e-wallets, payments, lending, and investment, marketing costs, operating costs, and risk management costs all increase. The challenge is therefore how to maintain efficiency while scaling up. MoMo previously accepted substantial losses to expand market share. Specifically, in 2017, MoMo's revenue reached approximately VND 1.734 trillion, but its gross

profit margin was only 2.1%, and the company recorded large losses (Vietnam Investment Review, 2018). By 2024, MoMo became profitable for the first time.

For VNG, innovation activities such as R&D, new technology experimentation, and new market expansion often require high costs, high risks, and long payback periods, while pressure from shareholders, markets, and profitability remains present.

VNG also faces challenges in the commercialization of products and services, particularly in the transition from research or experimentation to the market. This is a vital challenge in the innovation process under international integration. For example, VNG has announced AI products, cloud services, and new platforms, but some remain at an early stage. The process of bringing innovation from the laboratory or internal enterprise environment to the market in order to generate large-scale revenue is difficult, as it requires marketing, sales, customer support, service operation, and related activities. This requires a clear and effective business model (Van, 2024).

Slow access to and application of new technologies: Vietnamese enterprises often adopt technologies later than enterprises in other countries, resulting in lower innovation effectiveness. They also lack databases, digital infrastructure, and information analysis capabilities needed to create innovative products based on market demand.

(3) Limited capacity for international cooperation

Enterprises have limited linkages with international partners in research, product development, and technology transfer. Their lack of experience in managing cross-border cooperation causes them to miss innovation opportunities.

External challenges faced by enterprises

(1) Insufficiently synchronized legal environment, business environment, and support policies

Legal environment: Policies encouraging innovation remain fragmented, lack long-term consistency, and are not sufficiently attractive to enterprises. Intellectual property protection procedures remain complex, causing enterprises to hesitate in investing in creative activities.

Although open innovation and international cooperation are important, the domestic market remains limited in scale, consumer habits, and customers' income levels.

VNG participates in open innovation initiatives and seeks international partners to develop solutions such as eKYC and fintech. However, the transition from cooperation and experimentation to commercialization and scale-up remains challenging.

Infrastructure and security have not kept pace: Technology infrastructure in many areas, especially rural areas, remains weak. Information security and data protection have not received adequate attention.

Because MoMo operates in financial services, the expansion of lending, investment, and insurance services requires compliance with strict regulations related to banking, e-wallets, and insurance and entails security and data risks. The company faces challenges in maintaining trust and security while flexibly meeting legal requirements to expand new products. Some cases have involved user complaints about transaction incidents and system disruption. On October 19, 2023, many MoMo users were unable to make transactions or log in (Luan, 2023).

VinFast's electric vehicle industry is affected by infrastructure issues, including charging stations, foreign component supply chains, production costs, and state policies. In addition, legal regulations, international standards, and rapidly changing global market trends affect the innovation capacity of Vietnamese enterprises in general and Vingroup in particular.

(2) International competition and integration pressure

Market risk and industry competition: In the context of integration, Vietnamese enterprises must compete with international corporations that have strong R&D capacity and abundant resources. Domestic products and services can easily be replaced if enterprises fail to upgrade technology in time or create distinctive value.

VNG operates in games, social networks, and fintech, all of which are highly volatile sectors

dependent on domestic and foreign user trends, advertising expenditure, and legal regulations. VNG has recorded a slowdown in the gaming market and more cautious advertising spending in Vietnam (Hung, 2025). When expanding internationally, VNG faces strong competition in foreign markets, requirements for product localization, new technological and management standards, and cultural, legal, and operational risks. A product that succeeds domestically may not necessarily achieve the expected results internationally, and substantial resources are required for such expansion.

For MoMo, Vietnam's domestic market already includes many e-wallet and super-app competitors, such as ZaloPay and ShopeePay. Moreover, unlike some competitors, MoMo is not directly attached to a large retail ecosystem. It must therefore build and maintain differentiation through product quality.

For VinFast, the objective of entering the United States, Europe, and other countries exposes the enterprise to very strong competition from established brands, as well as barriers related to legal standards, infrastructure, and brand recognition. International expansion requires higher standardization, higher operating costs, and stronger adaptation to local markets. This shows that innovation is not only about technology but also about business models, branding, and logistics. A major challenge is that innovation must be globalized: it must not only succeed in Vietnam but must also be compatible with international standards.

5. Discussion

5.1. Enterprise-level solutions

(1) Enterprises should improve awareness and strategic thinking

Enterprises need to regard innovation as a matter of survival rather than merely a trend. In particular, business leaders must proactively develop long-term strategies that integrate innovation and digital transformation into all activities.

Enterprises should accelerate the transition from traditional models to digital business, platform economy models, and e-commerce. They should use modern management tools such as ERP, CRM, and BI; build an innovation-oriented corporate culture; encourage initiatives at all levels; and establish an open and flexible working environment that accepts trial and error and supports learning.

VNG is promoting its "Go Global" strategy and expects AI to become a new growth pillar. VNG's AI-integrated products, such as its AI-based OCR solution, have been applied in several major banks in Vietnam, helping to reduce labor costs and improve operational efficiency.

Vingroup established the VinIF Innovation Foundation in 2018. VinIF was the first foundation in Vietnam established by a private enterprise to support scientific and technological research. The foundation focuses on science, technology, engineering, medicine and pharmacy, economics, and education, with the aim of creating positive and sustainable changes for Vietnam. This reflects Vingroup's strategic thinking, in which the innovation foundation serves as a core mechanism for implementation.

(2) Enterprises should increase investment in R&D and digital technology

Enterprises need to strengthen the development of internal research and development units or cooperate with institutes and universities. They should apply new technologies such as AI, big data, IoT, and blockchain to production and business activities.

VinIF, under Vingroup, has funded more than 100 scientific and technological research projects, especially highly applicable projects aimed at addressing practical social issues. This contributes to improving research and innovation capacity within Vietnam's scientific community.

VNG has cooperated with GreenNode to develop large-scale AI cloud infrastructure in Southeast Asia, with the aim of providing powerful cloud services for enterprises. This constitutes an important platform for deploying AI applications and supporting enterprise digital transformation.

(3) Enterprises should create high-quality and differentiated products

For innovation to succeed in international integration, enterprises need to continuously innovate their products and services with quality and differentiation from other products. This is evidence of an enterprise's survival capacity in

competition.

VNG has researched and developed generative AI applications, including the large language model KiLM and the Stable Diffusion platform, to support enterprises in creating new products and services and personalizing customer experience. In particular, Zalo's KiLM model reportedly achieved performance comparable to GPT-4, helping Vietnam become one of the three Southeast Asian countries with its own large language model.

VNG has also developed a Camera AI solution through Veka.ai, applying artificial intelligence to real-time video analytics to support security management, traffic management, and smart city operations. This solution helps with facial recognition, early fire risk alerts, and customer experience optimization.

(4) Enterprises should develop digital and creative human resources

Enterprises should provide training and digital skills upgrading for employees and promote a culture of lifelong learning. They should also attract and retain high-quality human resources in technology and creative fields.

VinIF has awarded more than 1,100 master's and doctoral scholarships and 90 postdoctoral scholarships to train high-quality human resources in science and technology. VinIF also cooperates with universities to organize short-term courses and public lectures featuring visiting professors from Vietnam and abroad.

VNG focuses on improving the capacity of its professional workforce through more than 15 diverse internal training programs, in order to maximize employee potential and promote a culture of innovation within the company. In the coming period, VNG will continue to strengthen internal training and attract talent.

(5) Enterprises should build innovation ecosystems

For sustainable development, enterprises need to cooperate with startups, research institutes, universities, and startup support organizations. They should participate in industrial clusters, innovation centers, and technology incubators.

VinIF regularly organizes and sponsors international scientific conferences, creating opportunities for scientists in Vietnam and abroad to exchange experience and cooperate in research. This contributes to improving research quality and promoting innovation in Vietnam's scientific community. The foundation has established partnerships with more than 200 organizations, research institutes, and universities in Vietnam and abroad, thereby creating a broad support network for research and innovation.

VNG received the Silver Award in the category of "Artificial Intelligence Company of the Year" at the Globee Awards 2025, becoming the only enterprise from Vietnam and Southeast Asia to be honored for its achievements in AI.

(6) Enterprises should access state policies and support

Enterprises need to proactively learn about and utilize policies supporting enterprise innovation and digital transformation, such as tax exemptions and reductions for R&D activities, the National Technology Innovation Fund, and digital transformation support programs for SMEs.

5.2. State-level solutions

Improve policy mechanisms to promote innovation and digital transformation and strengthen policy implementation

The state should issue and amend laws and decrees to encourage enterprises to invest in innovation and digital transformation, including regulations related to digital transformation, high technology, and intellectual property. It should also develop tax and credit incentives for enterprises investing in R&D and the application of AI, IoT, and big data.

Administrative procedures should be simplified in order to create a transparent and favorable business environment for innovation activities.

Increase public investment in digital infrastructure and research and development

The state should invest in telecommunications infrastructure, big data, and cloud computing to support enterprise digital transformation. It should develop national innovation centers, high-tech parks, and technology business incubators. It should also increase budgetary expenditure on public research projects linked to enterprise needs.

Provide financial support and encourage

private investment

The state should provide preferential loans, innovation support funds, and state venture capital funds. It should encourage public-private partnerships in R&D investment and technology development.

Conditions should be created for enterprises to access state support programs, such as the National Digital Transformation Program and Program 844.

Develop high-quality human resources

University and college curricula should be renewed to align with enterprise needs and new technologies. The state should support enterprises in training and improving personnel capacity in areas such as AI, data, cybersecurity, and digital skills. It should also connect enterprises with education and training institutions to create appropriate human resources.

Connect the national innovation ecosystem

The state should strengthen its coordinating role in connecting stakeholders, including the government, enterprises, institutes and universities, and investment funds. It should develop national digital platforms to share data, information, and initiatives among enterprises. It should also support the development of local, regional, and sectoral innovation ecosystems.

Promote international cooperation

Vietnam should make use of free trade agreements (FTAs) to attract high-tech investment and support enterprise integration. It should cooperate with international organizations and foreign enterprises in technology sharing and knowledge transfer. The state should also support Vietnamese enterprises in participating in global value chains as innovative actors.

6. Conclusion

In the context of globalization and deep international integration, innovation has become a key factor determining the competitiveness and sustainable development of Vietnamese enterprises. Enterprises such as Vingroup, VNG, and MoMo are representative examples of pioneering spirit, willingness to take action, and the application of modern science and technology to create new value for society. However, despite notable achievements, Vietnamese enterprises continue to face numerous challenges, including limitations in high-quality human resources, insufficient investment capital for R&D, institutional barriers, and intense competitive pressure from international corporations.

To overcome these challenges, enterprises need to develop long-term innovation strategies, strengthen cooperation among the state, the private sector, and academia, and focus on investment in digital transformation, artificial intelligence, and creative human resource development. The state should continue to improve the legal framework and create a favorable environment for research, startups, and innovation activities.

In sum, innovation is not only an inevitable pathway for the development of Vietnamese enterprises in the digital age but also an important driving force for promoting the knowledge economy and enhancing Vietnam's position on the global economic map. Recognizing these challenges clearly is the first step toward enabling enterprises to develop more effective innovation strategies.

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ĐỔI MỚI SÁNG TẠO CỦA DOANH NGHIỆP VIỆT NAM TRONG HỘI NHẬP QUỐC TẾ VÀ NHỮNG THÁCH THỨC ĐẶT RA

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Ngày duyệt đăng: 7/5/2026
DOI: *https://doi.org/10.58902/nckhpt.e-v2i1.348*

Tóm tắt: *Trong bối cảnh toàn cầu hóa và hội nhập quốc tế sâu rộng, đổi mới sáng tạo đóng vai trò then chốt trong việc nâng cao năng lực cạnh tranh và phát triển bền vững của doanh nghiệp Việt Nam. Bài viết đề cập đến khía cạnh đổi mới sáng tạo và các thách thức từ lý thuyết đến thực trạng tại doanh nghiệp Việt Nam hiện nay. Bài viết đánh giá kết quả, thách thức của các doanh nghiệp nói chung và lấy các trường hợp điển hình các doanh nghiệp tiêu biểu như Vingroup, VNG và MoMo để phân tích trong đổi mới sáng tạo. Quá trình đổi mới sáng tạo vẫn đối mặt với nhiều thách thức, như hạn chế về nguồn nhân lực chất lượng cao, thiếu vốn cho R&D, rào cản thể chế và sức ép cạnh tranh toàn cầu. Để vượt qua những khó khăn này, doanh nghiệp cần có chiến lược đổi mới dài hạn, tăng cường hợp tác giữa nhà nước – tư nhân – học viện, đồng thời đầu tư mạnh mẽ vào chuyển đổi số, trí tuệ nhân tạo và phát triển nhân lực sáng tạo. Bài viết gợi mở 2 khía cạnh giải pháp từ phía doanh nghiệp và Chính phủ Việt Nam để đẩy mạnh hơn nữa quá trình đổi mới sáng tạo và chuyển đổi số từ doanh nghiệp. Nhìn chung, đổi mới sáng tạo là con đường tất yếu và động lực chủ đạo giúp doanh nghiệp Việt Nam phát triển bền vững, góp phần nâng cao vị thế quốc gia trong nền kinh tế tri thức toàn cầu.*

Từ khóa: *Doanh nghiệp; Đổi mới sáng tạo; Thách thức; Hội nhập quốc tế.*