

Adaptive Strategies of Construction Industry: The Impact of PESTLE Factors on Coteccons in Vietnam



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ABSTRACT: This study applies the framework—analyzing Political, Economic, Social, Technology, Legal, and Environmental (PESTLE) factors to examine their influence on strategic implementation within the construction sector, focusing on Coteccons Construction Joint Stock Company (Coteccons), a leading Vietnamese contractor. Using a mixed-method approach that combines financial analysis (2010–2024), case study evaluation, and macroeconomic assessment, this research explores how Coteccons has adapted its strategies to navigate external uncertainties. By integrating strategic management theories, this study provides insights into how leading construction firms can enhance strategic resilience. The research contributes to both theoretical discourse and practical implications, offering a framework for construction firms to optimize strategic decision-making in volatile environments.

KEYWORDS: PESTLE, strategies, construction industry, impact, Coteccons, Vietnam.

INTRODUCTION

The construction industry in Vietnam plays a crucial role in economic growth, reflecting the country's rapid urbanization and industrialization. Over the past two decades, this sector has experienced significant expansion, driven by government infrastructure projects, foreign direct investment (FDI), and the increasing demand for commercial and residential buildings. However, alongside these opportunities, construction firms face numerous challenges, including economic fluctuations, increasingly stringent legal requirements, and fierce market competition.

As one of the leading construction firms in Vietnam, Coteccons has been instrumental in shaping the industry's development. With a strong reputation for quality and innovation, the company has successfully executed numerous large-scale projects, including skyscrapers, industrial zones, and major infrastructure developments. However, to sustain its growth momentum in an ever-evolving business environment, Coteccons must adopt a flexible and adaptive strategic approach. The company faces challenges such as economic downturns, labor shortages, supply chain disruptions, and regulatory shifts that impact its competitive advantage. This study analyzes how Coteccons adjusts its strategy in response to external factors using the PESTLE framework—examining Political, Economic, Social, Technological, Legal, and Environmental influences. The PESTLE model, first introduced by Aguilar (1967) in his seminal work on environmental scanning, has since been widely utilized in strategic management research. By applying this framework, this research provides insights into how Coteccons manages risks and capitalizes on opportunities in a dynamic market. Furthermore, by assessing the company's financial performance from 2010 to 2024, the study evaluates Coteccons' resilience and adaptability in a volatile business landscape.

The findings of this research contribute to a deeper understanding of strategic decision-making processes in Vietnam's construction sector. Additionally, they offer valuable lessons for other firms facing similar challenges, particularly in emerging economies where regulatory changes and economic uncertainties are prevalent. The study aligns with existing literature on strategic adaptation in construction firms while providing empirical insights specific to the Vietnamese context.

Vietnam's construction industry is a key driver of economic growth but faces increasing challenges from a volatile business environment. Macroeconomic factors such as legal policies, economic fluctuations, competition, and sustainability demands significantly impact firms' strategic execution.

This study examines how macro-environmental factors influence strategy implementation in Vietnam's construction sector, focusing on Coteccons Construction Joint Stock Company (Coteccons). As a leading general contractor, Coteccons offers a compelling case study due to its strong market position and strategic adaptability. The research aims to provide insights into how industry leaders respond to external pressures and extract valuable strategic lessons.

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Specifically, the study aims to:

- **Identify key macro-environmental factors shaping Coteccons' strategic decisions** using the PESTLE framework (Johnson, Scholes & Whittington, 2017).
- **Assess Coteccons' financial performance from 2010 to 2024** as an indicator of strategic adaptability (Mintzberg, Ahlstrand & Lampel, 2005).
- **Analyze Coteccons' strategic responses** based on competitive strategy (Porter, 1980) and dynamic capabilities theory (Teece, Pisano & Shuen, 1997).
- **Propose strategic recommendations** for construction firms facing similar challenges, contributing to both theory and practice (Barney, 1991; Grant, 2016).

This study bridges theoretical perspectives with practical insights, offering valuable contributions to strategic management research and industry applications.

RESEARCH METHODS

This study employs a mixed-method approach, integrating qualitative and quantitative techniques to analyze the strategic impact of macroeconomic factors on Coteccons. The PESTLE framework (Aguilar, 1967; Johnson, Scholes & Whittington, 2017) is used to identify key influences, including Political, Economic, Social, Technological, Legal, and Environmental factors. Data is collected from multiple sources, including industry reports, macroeconomic indicators such as GDP growth, inflation, and interest rates, as well as Coteccons financial data from 2010 to 2024, covering revenue trends, profit margins, and investment strategies. Secondary data from business reports and academic literature, incorporating strategic management theories from scholars such as Barney (1991), Porter (1980), and Teece et al. (1997), further supports the analysis. A case study approach (Yin, 2014) is applied to examine Coteccons' strategic adjustments and compare them with industry peers. The study employs financial and macroeconomic analysis to assess key performance indicators and external economic conditions, while the PESTLE framework and policy review provide insights into external influences shaping strategic decisions. Additionally, secondary expert insights are synthesized from published reports to enhance the qualitative assessment. This integrated approach ensures a comprehensive understanding of Coteccons' strategy, combining empirical data with theoretical perspectives to provide a holistic analysis of the company's strategic positioning.

LITERATURE REVIEW

Pestle Factors Impacting Coteccons' Strategy Implementation Process

Political factors

Over the past two decades, Vietnam has maintained a stable political environment, facilitating economic growth and attracting investment. The government has implemented numerous policies to promote infrastructure development, including the Public-Private Partnership (PPP) model and Foreign Direct Investment (FDI) incentives. These policies have positively influenced the construction industry, benefiting leading general contractors like Coteccons. A key strategic framework impacting Coteccons is Vietnam's Socio-Economic Development Strategy (SEDS), which prioritizes the expansion of transportation infrastructure, urban development, and industrialization. This strategic direction has enabled Coteccons to secure major contracts for projects related to bridge and road construction, urban complexes, and industrial zones. Additionally, policies favoring domestic contractors in public projects have provided opportunities for market expansion.

Furthermore, Vietnam's international trade policies directly affect the supply chain and pricing of construction materials. Participation in free trade agreements, such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the European Union-Vietnam Free Trade Agreement (EVFTA), has allowed domestic firms to access high-quality raw materials at competitive prices, thereby improving productivity and construction efficiency. Despite these advantages, the political environment still presents certain risks, particularly regarding shifts in economic policies. For instance, during the inflation control phase in 2011, the government imposed public investment restrictions, leading to a decline in construction demand. This forced companies like Coteccons to adapt their business strategies accordingly. Additionally, factors such as tax policy adjustments, land management reforms, and corruption risks within the construction industry can impact business operations.

To ensure sustainable growth, Coteccons must maintain strategic flexibility while complying with evolving regulations to uphold transparency and fair competition in the industry. Leveraging governmental support policies combined with effective political risk management will strengthen Coteccons' position in Vietnam's construction sector and facilitate international expansion.

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Economic factors

Economic conditions significantly influence Coteccons' strategic direction and financial performance. Between 2010 and 2019, Vietnam's economy experienced stable growth, with GDP expanding at an annual rate of 6-7%, driving high demand in the construction sector. As a result, Coteccons' revenue surged by 40% annually during this period (GSO, 2021). However, since 2019, tightened credit policies and legal bottlenecks have slowed down the market. The COVID-19 pandemic in 2020–2021 further exacerbated economic challenges, causing GDP contraction and severe disruptions in investment flows and supply chains, leading to a sharp decline in Coteccons' revenue (Coteccons Financial Report, 2021). Although the economy rebounded with an 8.1% GDP growth in 2022, high interest rates have continued to suppress the real estate market, limiting the company's recovery pace (World Bank, 2023).

Inflation and raw material price volatility exert significant pressure on the construction industry. During the 2011–2012 period, high inflation (CPI at 18%) pushed loan interest rates up to 17–19%, squeezing profit margins (SBV, 2012). Conversely, between 2015 and 2018, low inflation (3–4%) facilitated access to cheaper capital, enabling Coteccons to achieve a 33% annual revenue increase (Coteccons Annual Report, 2018). However, from 2022 onward, with interest rates surpassing 10%, the real estate market has stagnated, forcing the company to optimize costs and tightly control debt levels (Vietnam Construction Industry Report, 2023). Exchange rate fluctuations also impact imported construction materials such as steel and cement. Between 2008 and 2011, the Vietnamese dong depreciated at an annual rate of 6.9%, significantly raising construction costs (IMF, 2012). From 2012 onward, a more stable exchange rate environment allowed for better financial forecasting. However, in 2022, currency volatility caused by inflation forced Coteccons to adjust its procurement strategies to mitigate risks (Coteccons Financial Report, 2022). Public and foreign direct investment (FDI) plays a crucial role in sustaining Coteccons' project pipeline. Government-led infrastructure projects, such as the North-South Expressway and Long Thanh International Airport, have provided consistent work for the company. Additionally, FDI inflows have driven construction demand, as demonstrated by Coteccons securing a \$1 billion LEGO factory project in Binh Duong in 2022 (VIR, 2022).

The cyclical nature of the real estate market heavily influences the construction sector. Following the 2011–2013 financial crisis, a VND 30 trillion stimulus package helped revive the real estate market, leading to Coteccons' rapid expansion between 2014 and 2018 (Vietnam Real Estate Report, 2019). However, since 2019, credit tightening and legal constraints have reduced contract backlogs. Between 2020 and 2022, the company strategically pivoted towards infrastructure and industrial construction while exploring international opportunities to diversify its revenue streams (Coteccons Strategy Report, 2022). Thanks to its prudent financial strategy, Coteccons has maintained stability even in downturns by minimizing debt exposure and selecting high-quality clients. While competitors like Hoa Binh (HBC) reported a loss of over VND 2.6 trillion in 2022, Coteccons managed to avert significant losses through strict cash flow management and cost optimization (HBC Financial Report, 2022).

Social factors

The social environment significantly influences the construction industry, affecting market demand, labor resources, and corporate strategies. The rapid urbanization in Vietnam, increasing from 30% in 2010 to 42.2% in 2024 (General Statistics Office of Vietnam, 2024), has driven substantial demand for housing, commercial spaces, and infrastructure. This trend presents an opportunity for Coteccons to diversify its project portfolio, reducing its reliance on traditional residential real estate. Additionally, Vietnam's population reached 100 million in 2023, with per capita income rising from \$1,300 in 2010 to \$3,600 in 2020. This economic growth has fueled demand for high-quality housing, eco-friendly urban areas, and resort real estate. Real estate has also become a popular investment channel, creating cyclical booms and downturns, requiring Coteccons to flexibly expand into more stable segments such as industrial factories and high-tech parks.

Shifting consumer preferences and construction standards pose both challenges and opportunities. Increasing awareness of green building certifications such as LEED, energy-efficient designs, and smart construction technologies has necessitated higher execution standards for Coteccons. To maintain its competitive advantage, the company has integrated modern technologies and strengthened quality control measures. Furthermore, the construction sector faces a skilled labor shortage due to migration trends, with many workers moving to Japan and South Korea. Between 2011 and 2018, Vietnam's construction labor wages increased by an average of 9.3% annually (Vietnam Chamber of Commerce and Industry, 2019), exerting significant cost pressure. To address this issue, Coteccons has invested in internal training, collaborated with universities, implemented an Employee Stock Ownership Plan (ESOP) to retain talent, and adopted digital project management tools to optimize workforce efficiency and improve construction performance.

Corporate Social Responsibility (CSR) has become increasingly important as investors and customers prioritize companies with strong environmental protection policies, fair labor practices, and community contributions. In response, Coteccons launched the "Safety First" initiative, investing in protective equipment and safety training programs to enhance brand reputation and

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sustainability. The COVID-19 pandemic (2019–2021) demonstrated the profound impact of social factors on the construction industry. Social distancing measures led to site shutdowns, labor shortages, and increased operational costs. While some competitors downsized their workforce, Coteccons maintained employee support policies and swiftly resumed projects when conditions allowed, enabling faster recovery and strengthening trust among partners.

Technological factors

Technology plays a pivotal role in enhancing productivity, quality, and competitiveness in Vietnam's construction industry. From 2010 to 2024, the sector has witnessed a gradual industrialization process, albeit at a slow pace. Historically, a large proportion of construction projects were self-built by individuals using conventional methods. However, recent years have seen a significant push from both the government and enterprises to integrate modern technologies, such as Building Information Modeling (BIM), advanced construction techniques, prefabricated solutions, and digital project management. In 2017, the Ministry of Construction introduced a roadmap for BIM adoption to improve project efficiency and sustainability. Despite this initiative, by 2019, BIM application remained limited, with less than 2% of projects achieving green certification or adopting sustainable technologies (Ministry of Construction, 2019). This scenario presents both challenges and opportunities for leading enterprises like Coteccons to leverage technology as a competitive advantage.

Coteccons has strategically positioned technology as both a challenge and an opportunity to strengthen its industry leadership. The company has been at the forefront of implementing modern construction techniques, such as top-down construction, prestressed concrete, and digital transformation in project management. One notable initiative is the deployment of Enterprise Resource Planning (ERP) systems to optimize cash flow, significantly reducing the time required for debt recovery. Since integrating BIM in 2014, Coteccons has streamlined design, project scheduling, and monitoring, as exemplified by the successful completion of Landmark 81. BIM technology has enhanced construction quality, improved transparency, and strengthened Coteccons' competitive edge in project bidding (Nguyen et al., 2021). Beyond construction methodologies, Coteccons has actively researched and applied sustainable materials, including CO₂-mineralized concrete, lightweight concrete, and energy-efficient glass. These innovations not only optimize costs and environmental impact but also align with green building standards. Additionally, Coteccons has embraced Industry 4.0 technologies, such as Artificial Intelligence (AI), the Internet of Things (IoT), Big Data, and cloud computing, to enhance operational efficiency, site monitoring, safety measures, and project performance (World Economic Forum, 2023). The company's strategic partnership with Microsoft since 2023 has enabled the integration of AI-driven automation in project management, fostering long-term competitive advantages.

Investments in modern equipment, such as Potain tower cranes, 3D printing technology, and smart sensors, have further improved productivity and quality control. By developing a digital ecosystem for project management, Coteccons has driven innovation and R&D collaborations to stay ahead of emerging trends, including smart construction, 3D-printed buildings, and robotic construction.

Legal factors

The legal environment in Vietnam's construction sector has undergone significant transformations from 2010 to 2024, aiming for greater transparency and efficiency to enhance construction quality, occupational safety, and industry competitiveness. The Construction Law 2014 (amended in 2020), along with regulations on bidding, contracts, and insurance, has created a more level playing field while imposing stricter compliance requirements on contractors. Coteccons has swiftly adapted to these legal changes by ensuring strict adherence to regulations, establishing a dedicated legal affairs department, and actively participating in policy-making discussions. By staying updated on regulatory changes, Coteccons has been able to adjust its business strategy, particularly in green building and energy-efficient projects (Ministry of Construction, 2023). Key legislations such as the Bidding Law 2013, the Housing Law 2014, the Real Estate Business Law 2014, and the Investment Law 2020 have enhanced transparency and project management efficiency. Coteccons has leveraged its professional governance system to optimize its competitive strategy, minimize legal risks, and secure large-scale projects by maintaining transparent financial records and demonstrating superior construction capabilities. These regulatory advancements have allowed private enterprises like Coteccons to expand into areas previously dominated by state-owned enterprises while capitalizing on new construction technologies and standards. The enactment of the Public-Private Partnership (PPP) Law 2020 has opened new investment opportunities for Coteccons, enabling it to participate in infrastructure projects not only as a contractor but also as an investor. Additionally, policies allowing foreign homeownership have driven demand in the high-end real estate segment, where Coteccons has significant opportunities for project execution. However, legal risks remain, particularly concerning land use rights and project approvals, which can delay market activity and affect the company's workload.

Vietnam's gradual alignment with international legal practices, including the recognition of case law since 2015, has contributed to more consistent adjudication of construction disputes. New provisions in the Civil Code and Construction Law

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regarding construction contracts, project warranties, and contract breach penalties have enabled Coteccons to implement robust risk management measures, mitigate disputes, and strengthen its competitive position.

Environmental factors

The construction industry is significantly influenced by the growing emphasis on sustainable development and climate change, particularly in material production such as cement, a major source of CO₂ emissions. Between 2010 and 2020, Vietnam's CO₂ emissions doubled due to industrial and construction sector growth, prompting the government to introduce policies aimed at emission reduction and the promotion of green buildings. As a leading contractor, Coteccons faces increasing pressure to comply with stringent environmental regulations while proactively integrating sustainability into its operations. This includes utilizing eco-friendly materials, optimizing construction processes, waste management, and developing energy-efficient buildings. The company has implemented the ISO 14001 environmental management system and collaborates with investors to fulfill environmental commitments. Initiatives such as material recycling, noise reduction, and dust control not only ensure legal compliance but also strengthen Coteccons' reputation as a socially responsible enterprise.

The trend of green building is rapidly expanding, with the number of certified green buildings in 2024 surpassing government targets. Coteccons is swiftly adapting by incorporating green technologies and advising investors on the long-term benefits of sustainable design. Concurrently, the company must navigate increasingly stringent urban environmental regulations, such as dust control, noise restrictions, and limitations on off-hour construction. Several of Coteccons' projects, including Deutsches Haus (Ho Chi Minh City) and the LEGO factory, have met rigorous international environmental standards, reinforcing the company's competitive edge and market expansion opportunities.

Vietnam's commitment at COP26 to achieving net-zero emissions by 2050 has placed substantial pressure on the construction industry. The country aims to cut 74.3 million tons of CO₂ emissions by 2030 through green building initiatives and energy-efficient materials, leading to new policies such as carbon taxation and mandatory energy efficiency standards. Coteccons is at the forefront of this transition, collaborating with suppliers of sustainable materials, enhancing green construction capabilities, and meeting environmental, social, and governance (ESG) criteria to attract international investment. Moreover, climate change directly affects the construction industry through extreme weather events, including storms, floods, and droughts, which disrupt construction schedules and increase occupational safety risks. Coteccons has proactively improved technical solutions, adjusted designs to enhance climate resilience, and implemented flexible construction scheduling to mitigate seasonal impacts. The company has also introduced measures to protect workers from heat stress in challenging working conditions.

FINDINGS AND DISCUSSION

Coteccons' Adaptive Strategies

Expansion into infrastructure

As Vietnam's economy grows, the demand for large-scale infrastructure projects increases, prompting Coteccons to shift from commercial construction to key infrastructure, aligning with government policies on transportation, industrial zones, and urban development. The company has secured contracts for expressways and national roads, leveraging government investments in connectivity (General Statistics Office of Vietnam, 2023), while also expanding into the aviation sector through airport modernization projects to accommodate growing tourism and business needs. Additionally, Coteccons capitalizes on rising FDI by collaborating on industrial parks and logistics centers, facilitating multinational manufacturing investments, and contributes to metro and smart city projects to alleviate urban congestion. Despite facing regulatory barriers, prolonged project timelines, and financial pressures, Coteccons mitigates risks through strategic partnerships and public-private financing, reinforcing its market position and long-term role in Vietnam's economic development.

Prudent financial strategy and risk management

Coteccons has established a strong financial reputation by adopting a conservative financial strategy while ensuring sustainable growth. The company maintains high liquidity, minimizes debt risks, and diversifies revenue sources to mitigate the impact of economic cycles in the construction industry. One of the key aspects of Coteccons' financial strategy is its low-debt policy, which sets it apart from many competitors that rely heavily on borrowing to finance projects. Furthermore, Coteccons implements a strict cost control strategy and optimizes its budget to counter rising costs of raw materials, labor, and regulatory compliance requirements. The company employs advanced project management tools, real-time budget tracking systems, and resource allocation optimization to ensure that project costs remain within planned limits. Additionally, by applying value engineering techniques, Coteccons reduces unnecessary expenses while maintaining high construction quality.

To further mitigate risks, Coteccons pursues a diversified investment strategy that extends beyond residential and commercial construction to include infrastructure, industrial parks, and logistics. This diversification helps the company balance

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revenue streams between high-margin private sector projects and long-term government contracts, ensuring a stable cash flow. Before engaging in large-scale projects, Coteccons conducts comprehensive risk assessments, including market risk analysis, regulatory challenges, supply chain vulnerabilities, and contract execution risks. By proactively identifying potential obstacles, the company develops contingency plans to minimize delays and unforeseen costs.

Lastly, a core element of Coteccons' financial strategy is maintaining transparent corporate governance and strict adherence to financial regulations. The company publishes periodic financial reports, conducts independent audits, and engages in open dialogues with stakeholders. These practices enhance transparency and accountability, strengthening investor and partner confidence. By implementing these strategic financial measures, Coteccons ensures long-term sustainability and resilience in a volatile economic environment.

Digital transformation and technological innovation

The construction industry is undergoing a profound digital transformation, and Coteccons has actively embraced advanced technologies to enhance efficiency, reduce costs, and maintain a competitive edge. Digital transformation plays a crucial role in optimizing operations, improving project management, and ensuring sustainability.

One of Coteccons' most significant technological investments is the adoption of Building Information Modeling (BIM). BIM enables real-time collaboration between architects, engineers, and contractors, improving design accuracy, minimizing material waste, and reducing project delays. According to Eastman et al. (2011), BIM has become a fundamental tool for construction firms seeking to increase efficiency and mitigate risks in project execution. Moreover, the adoption of BIM aligns with Vietnam's government directive to encourage digital transformation in construction (Vietnam Ministry of Construction, 2022). Coteccons also leverages artificial intelligence (AI) and data analytics to forecast costs, identify risks, and optimize resource allocation. AI-driven predictive analytics in construction management has been shown to enhance decision-making by providing real-time insights into project progress and financial forecasting. Furthermore, the integration of the Internet of Things (IoT) has improved site safety and operational efficiency, enabling real-time monitoring of environmental conditions and worker safety compliance.

Coteccons' digital transformation and technological adoption represent a strategic response to the evolving demands of the construction industry. By integrating BIM, AI, IoT, the company ensures greater efficiency, cost-effectiveness, and sustainability in its operations. This approach not only enhances Coteccons' market position but also contributes to the broader digitalization efforts within Vietnam's construction sector.

CONCLUSION

Coteccons has demonstrated strong adaptability in Vietnam's evolving construction industry, maintaining market leadership through strategic responses to external factors. This study highlights the importance of integrating economic trends, regulatory requirements, technological advancements, and social shifts in corporate strategy. The PESTLE analysis reveals Coteccons' effective risk mitigation in political, economic, social, technological, legal, and environmental domains. Its commitment to green construction, digital transformation, and project diversification has secured long-term growth, aligning with industry trends emphasized by IBST (2023) and the Ministry of Construction (2024). Financial prudence remains crucial, as evidenced by its low-debt model and disciplined cost management, critical amid rising material costs and inflation (General Statistics Office, 2024). Investments in infrastructure, digital solutions, and workforce development further enhance its market position. Despite successes, challenges such as supply chain disruptions, regulatory changes, and intensifying competition persist. Future strategies should focus on AI-driven construction, stronger public-private partnerships, and enhanced sustainability in line with global ESG standards. Coteccons' strategic adaptability will be key to sustaining success, leveraging innovation, financial discipline, and sustainability to strengthen its leadership in Vietnam's built environment, contributing to research on strategic execution in emerging markets.

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