



Anna Shama

Supply Chain Management as a Strategic Tool for EU Market Expansion

A Comparative Study of BYD and Hyundai in the New Energy Vehicle Industry

Topic and Research Question

Research Question: **How do East Asian new energy vehicle producers — BYD and Hyundai — use supply chain management strategies to address the challenges of expanding into the EU market?**

The European automotive industry is undergoing a rapid transition from traditional internal combustion engine vehicles to new energy vehicles. This creates major opportunities for East Asian manufacturers, but also exposes them to strict EU regulations, trade barriers, sustainability requirements, and changing consumer expectations.

This thesis compares BYD and Hyundai as two leading East Asian NEV producers with contrasting supply chain models. BYD represents a vertically integrated Chinese manufacturer with strong control over batteries and key technologies. Hyundai represents an established Korean automaker with long-standing European production, supplier partnerships, and brand familiarity.

By comparing these two cases, the thesis examines how supply chain management becomes a strategic tool for EU market expansion under conditions of regulatory pressure, infrastructural gaps, and geopolitical uncertainty. It is relevant for policymakers, industry actors, suppliers, consumers, and scholars in the field, as it offers insight into how East Asian automakers adapt to the changing European NEV market.

State of the Art

Existing research on the NEV industry highlights battery technology, sustainable supply chains, critical raw materials, government support for electric mobility, and recycling challenges related to lithium-ion batteries. For this thesis, several works were particularly important. Shah and Kirche (2025) provide a general SCM framework, while Yu (2024) helps structure the NEV value chain into upstream, midstream, and downstream stages. Chen and Chen (2023) offer a useful innovation typology for analysing technological competitiveness in electric vehicles. Wang (2024b) is especially relevant to disclosure and sustainability challenges.

However, much of the existing research focuses on global NEV market trends or on the success of particular companies, especially Tesla. The EU market is often discussed from the perspective of European firms and policymakers, especially in relation to competitive pressure, trade barriers, and the protection of local

industry. BYD is often analysed mainly in the context of China's domestic market, while Hyundai is frequently treated as a traditional automaker rather than as a NEV producer. Comparative research on Chinese and Korean NEV firms expanding into the EU market remains limited.

This thesis addresses this gap by comparing BYD and Hyundai through a supply chain management framework. It examines how these firms compete in Europe within the broader context of the EU's transition toward sustainable transportation.

Methodology and Approach

This thesis applies a comparative qualitative case study approach to BYD and Hyundai Motor Company. The analysis is based on academic literature, company reports, EU policy documents, industry reports, market data, and selected third-party assessments.

The study focuses on the EU-27 market in the period 2020–2025, when key EU instruments such as CO₂ fleet standards, the EU Battery Regulation, CBAM, CSRD/CSDDD, and countervailing duties on China-made BEVs became especially relevant. The analytical framework is grounded in supply chain management theory and compares both firms across three value-chain stages: upstream, midstream, and downstream.

The comparison is structured around five criteria: Sustainability & CSR, Innovation & Competitiveness, Policy & Material Access, Risk Management, Resilience & Firm Governance, and Brand & Quality Management. This framework assesses how different SCM strategies support competitiveness, resilience, and adaptation to EU-specific market conditions.

Main Facts

The empirical analysis shows that BYD and Hyundai approach the European NEV market through different supply chain strategies. BYD relies on strong internal control, battery integration, and rapid expansion, while Hyundai builds on supplier partnerships, existing European production, and established market trust.

Criterion	BYD	Hyundai
Sustainability & CSR	Pure NEV focus and recycling initiatives support EU climate goals, but ESG disclosure and deeper-tier traceability remain incomplete.	Stronger formal ESG governance and European production improve credibility, but ICE dependence and upstream traceability gaps remain.

Innovation & Competitiveness	Uses mainly LFP Blade Battery, offering safety, lower cost, and reduced cobalt and nickel dependence, but with lower energy density than NCM. Sodium-ion development may further diversify BYD's battery strategy. Flash Charging network is planned in Europe from 2026.	Uses mainly NCM batteries, supporting longer range and strong performance, but with higher material dependence and cost. Hyundai's E-GMP platform, with its 800-V architecture, enables very fast charging, while its FCEV strategy provides a longer-term diversification option. Its IONITY partnership gives access to an operational 350 kW charging network.
Policy & Material Access	Stronger upstream access through China's battery-material ecosystem, but China-made BEVs face EU duties and countervailing tariffs.	Benefits from EU–Korea FTA tariff-free access but remains dependent on external battery partners and China-linked material processing.
Risk Management, Resilience & Firm Governance	Vertical integration strengthens internal control, while European localisation is still developing.	Established production in Czechia and Türkiye reduces logistics and market-entry risks.
Brand & Quality Management	Pure NEV brand identity and strong Euro NCAP results support growing brand awareness, but trust and service coverage are still being built.	Long-standing European brand familiarity, dealer network, and after-sales infrastructure are clear advantages, but its transition from an ICE legacy remains ongoing.

Overall, BYD's strengths lie in integration, speed, and technological ambition, while Hyundai's strengths lie in localisation, resilience, and established market trust.

Results

The findings show that the transition from ICE vehicles to NEVs creates a critical window of opportunity for new entrants to challenge established market structures. BYD uses this moment more aggressively: it seeks rapid expansion through European localisation, vertically integrated battery production, active brand-building, and planned investment in Flash Charging infrastructure. Its strategy is ambitious and market-transformative, aiming not only to sell vehicles in Europe but to become a local player in production, infrastructure, and technological standards.

Hyundai follows a more stable and risk-resistant strategy. It builds on long-standing European production, established consumer trust, Korean supplier partnerships, and participation in charging alliances. Unlike BYD, Hyundai does not need to reshape the market quickly. Its existing position, lower political exposure, and traditional automotive background allow it to remain competitive even if the NEV transition develops more slowly than expected.

Overall, the comparison shows that success in the EU NEV market depends not only on cost advantages or product innovation. Localisation, regulatory fit, infrastructure, resilience, brand trust, and strategic timing are equally important.

At the same time, both companies still face important sustainability challenges. ESG adaptation to EU requirements remains incomplete, especially regarding deeper-tier traceability, auditable disclosure, and value-chain transparency. Lithium-ion battery recycling also requires much greater attention. Although both firms show growing willingness to engage with recycling and circularity initiatives, the practical effectiveness of these efforts is still difficult to evaluate. This is especially significant because sustainability remains one of the most important criteria for a successful NEV transition.

References

All references can be found in the full version of the MA thesis available at <https://theses.univie.ac.at/>

About the Author

The author holds a BSc in International Business Administration and a BA in Korean Studies from the University of Vienna. She completed exchange programmes at Seoul National University and Fudan University in Shanghai. Her academic interests include SCM, electric mobility, and EU–Asia economic relations. She hopes to apply this international experience in her future career.

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