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RESEARCH ARTICLE

From Product Globalization to Capacity Globalization: BYD's Comprehensive Overseas Expansion Strategy

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Abstract

In the face of volatile domestic and international market environments and rapid industrial evolution, the key to successful corporate globalization lies in how enterprises dynamically capture multiple windows of opportunity--institutional, technological, and demand-driven–through environmental scanning strategies. This process must align with organizations' dynamic capabilities to translate insights into decisive overseas expansion strategies that reconstruct value chains. Through an exploratory case study of BYD Co., Ltd. in Shenzhen, this paper examines the application of opportunity window theory and dynamic capability theory in corporate globalization strategies. It investigates how enterprises identify optimal timing for internationalization and the critical importance of leveraging domestic and global environmental opportunities for overseas expansion. The findings reveal that enterprises' acute market insights enable windows of opportunity's identification and responsiveness to international demands, meanwhile, the enhancement of dynamic capabilities is crucial in seizing these opportunities, transforming them into core competitive advantages, and ultimately bolstering corporate competitiveness, thereby ensuring the successful implementation of globalization strategies.

Keywords: New Energy Vehicles (NEVs); environmental scanning; windows of opportunity; global expansion strategy; BYD

Introduction

With the escalating challenges of global climate change and environmental pollution, promoting green economic transformation and low-carbon development in the automotive industry has emerged as a shared objective among nations worldwide. In this context, new energy vehicles (NEVs) have entered a period of rapid development due to their demonstrated advantages in reducing carbon emissions and energy consumption. Governments globally have implemented incentive policies – including purchase subsidies, tax incentives, and free parking privileges – to stimulate NEV adoption. Concurrently, growing consumer recognition of eco-friendly transportation solutions has driven sustained market demand expansion. This dual momentum of policy support and environmental consciousness has positioned the NEV sector as a critical pathway for achieving sustainable mobility and meeting international climate commitments.

Leveraging advantages such as a massive consumer market, comprehensive industrial categories, advanced power battery technology, efficient industrial chain systems, and holistic innovation capabilities, China's automotive industry has successfully executed its "lane-changing competition" strategy and achieved late-mover catch-up, while attaining significant progress in its "going global" initiatives(J.T.Chen, 2023). Driven by multifaceted factors including policy support, market demand, and corporate technological innovation, China's new energy vehicle (NEV) industry has achieved remarkable developmental milestones, establishing a comprehensive industrial ecosystem with world-leading capabilities in core technologies such as battery systems, electric motors, and electronic controls. As domestic market saturation intensifies and competition escalates, Chinese NEV manufacturers are increasingly targeting international markets to pursue sustainable growth opportunities.

As one of the earliest globalized industries worldwide, the automotive sector exerts strong multiplier effects on national economic development. It remains a critical battleground for international industrial competition and is frequently prioritized by late-developing nations as a strategic sector for technological catch-up efforts((J.T.Chen, 2023). As a pioneering enterprise in China's NEV sector, BYD initiated its global strategic expansion as early as 1998. Evolving from initial overseas deployments in battery and electronics businesses to subsequent commercial vehicle exports, and ultimately to its current phase of passenger vehicle globalization and overseas production capacity establishment, BYD has demonstrated noteworthy accomplishments in global markets. However, international market expansion entails navigating multifaceted uncertainties, including market volatility, technological barriers, trade disputes, tariff fluctuations, international public relations challenges, and geopolitical dynamics. Against this backdrop, an in-depth investigation into BYD's strategic practices holds significant theoretical and practical value—particularly regarding how the enterprise leverages systematic environmental scanning strategies to identify opportunity windows arising from institutional transitions, technological innovations, and market demands, while synergizing these insights with organizational dynamic capabilities to formulate effective globalization strategies. This research paradigm offers critical insights into the operational mechanisms through which emerging market enterprises transform environmental uncertainties into competitive advantages during internationalization processes. BYD was selected in this study, and a case study approach was employed to conduct an in - depth analysis. It focuses on two core research questions: first, how environmental scanning and the windows of opportunity theory are interconnected to facilitate successful corporate internationalization; second, how the enhancement of enterprise dynamic capabilities, in the context of responding to opportunity windows, is transformed into core competitive advantages for global expansion, thereby supporting the implementation of a comprehensive internationalization strategy. Compared to traditional quantitative research methods, the case study approach enables a profound exploration of specific practices and strategies during corporate internationalization. Through a detailed examination of BYD’s strategic evolution from product exports to full-spectrum globalization (including production capacity, technology, and brand expansion), this methodology vividly demonstrates the application of theoretical frameworks in real-world corporate operations.

The innovation of this study lies in two aspects. First, it adopts a panoramic perspective on internationalization strategy research. Unlike previous studies that focused solely on product exports or single-market expansion, this research comprehensively analyzes BYD’s strategic deployments across multiple dimensions, including product globalization, overseas production capacity establishment, brand internationalization, and technology standardization. By systematically investigating BYD’s holistic globalization strategy, the study fully reveals its developmental trajectory and strategic patterns in global markets, providing new perspectives and analytical frameworks for understanding corporate internationalization processes.Second,The Window of Opportunity theory provides a theoretical framework for analyzing China's electric vehicle industry's "lane-changing competition" strategy and internationalization initiatives amid industrial transformation(Wang Jing， 2024). the study constructs an analytical framework based on the window of opportunity theory. This framework explores how BYD identifies

changes in domestic and international institutional environments, technological innovations, and market demands through environmental scanning, captures potential opportunity windows, and strategically integrates its internal dynamic capabilities with external opportunities to formulate effective internationalization strategies. The framework not only enhances the understanding of BYD's successful globalization practices but also contributes new empirical evidence to the development of corporate internationalization theory. Specifically, it demonstrates how enterprises align organizational adaptability with emerging market conditions, offering transferable insights for emerging market multinationals navigating institutional complexities and technological disruptions.

The structure and organization of the paper includes the following sections: Literature Review (comprising Conceptual Framework, Theoretical Framework, and Research Commentary), Research Design (including Research Methodology, Case Selection and Data Sources, Variable Measurement, and Case Stage Classification), Case Analysis and Key Findings, and finally, Conclusion.

Literature Review

Environmental Scanning and windows of opportunity

The concept of environmental scanning (ES) was first proposed explicitly in Aguilar's book *Scanning the Business Environment* in 1967, defining it as an organizational practice of systematically collecting and interpreting external environmental information to identify trends or transformative signals, thereby informing strategic decision-making. Subsequent research has expanded beyond the focus of "external environment", with scholars refining the definition of environmental scanning through multiple lenses: A process for acquiring external information (Aguilar F J, 1967; Austerity, 1993; Ngamkroeckjoti, 2008; Zhong, 2013), a management method or tool (Liao, 2008; Haase H, 2011), a business intelligence mechanism integrating internal and external factors (Bedford D, 2015), an Information retrieval activities in business contexts (Wang, 2004), a comprehensive environmental monitoring system for competitive intelligence(Zhong, 2012). Although scholars have varying emphases in their understanding of environmental scanning, the consensus lies in its role in serving strategic decision-making. This process involves thoroughly identifying and analyzing events, trends, as well as key drivers and subtle signals (Maree C, 2010). By recognizing strategic threats and seizing opportunities in the external environment, and crafting corresponding strategic responses, enterprises can sustain their long-term competitive edge. The concept of "windows of opportunity" was first proposed by Perez and Soete (1988) to explain technological catch-up phenomena in latecomer countries. Lee and Malerba (2017) extended the concept to the industry level, categorizing it into three types: technological, demand, and institutional. The "demand window" specifically refers to emerging demand patterns, significant shifts in local demand, or business cycle changes (Mathews, 2005), later described in research as the "market opportunity window". Recent studies have shown that the alignment of opportunity windows with innovation strategies can significantly enhance the catch-up performance of latecomer enterprises, as evidenced by empirical research on Chinese manufacturing firms (Wu Xiaobo, 2019). Changes in external environments—technological, market, and institutional—create opportunity windows for companies to overtake through strategic maneuvers, necessitating organizational transformations to effectively respond to these windows.

Dynamic Capabilities

The concept of dynamic capabilities was first introduced by Teece et al. (1997), defined as a firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments. The

term 'dynamic' pertains to the firm's ability to adapt to shifting external conditions, ensuring the sustenance or reconstruction of competitive edges, whereas 'capabilities' underscore the pivotal role of strategic management in orchestrating and re-configuring organizational resources efficiently (Peng, 2019). Facing the complex and ever-changing international market, enterprises need to leverage dynamic capabilities to integrate and reorganize internal and external resources, thereby adapting to market fluctuations and gaining a competitive advantage in global expansion.

Enhanced dynamic capabilities enable firms to perceive environmental changes more swiftly and comprehensively. High perception ability helps companies achieve precise self-positioning, enhance the conversion efficiency of opportunity windows, accelerate the process of technological catch-up, and consolidate international market position. (Ma, 2023). Subsequent studies have clarify dynamic capabilities into three dimensions: adaptive capability (a firm's ability to identify and capitalize on emerging market opportunities), absorptive Capability (a firm's ability to recognize, evaluate and utilize the value of new external knowledge), and innovative capacity (a firm's ability to develop new products or markets, through aligning strategic innovative orientation with innovative behaviors and processes) (Wang et al., 2007). This tripartite framework, validated by Chinese scholars, demonstrates strong representativeness and paradigmatic value. Firms with heightened environmental sensing capabilities achieve rapid and thorough market cognition, thereby optimizing the translation of opportunity windows into strategic advantages.

Corporate Global Expansion Strategy

Global expansion is a natural progression for companies with mature industrial and managerial capabilities, serving as a critical strategic pathway for achieving international growth and sustainable development. This is supported by the fact that companies aim to achieve financial growth, which often involves expanding into new markets, accessing top talent, and diversifying their supply chains. Through overseas ventures, firms engage in technology complementarity and integration (Shi et al., 2024), expand market boundaries, reduce over-dependence on single markets, enhance brand value and global influence, drive technological innovation and industrial upgrading. Global expansion strategies are increasingly adopted as prudent responses to domestic market saturation and intensifying competition, aiming to consolidate global resources and strengthen supply chain resilience.

However, the expansion of firms into international markets exposes them to a range of concentrated risks and environmental turbulence, encompassing geopolitical uncertainties, operational complexities, and the necessity for robust risk management strategies. (Zhang, 2024), necessitating meticulous timing and unequivocal strategic clarity. To overcome these obstacles, enterprises must adopt environmental scanning strategies, systematically identifying and assessing international institutional changes, technological advancements, and shifting market demands, ultimately grasping the multidimensional nature of these dynamics. Concurrently, by aligning these external opportunities with internal dynamic capabilities, firms can synthesize actionable global strategies, translating insights into phased implementation plans that harmonize organizational strengths with market realities.

Research Commentary

Environmental scanning serves as a strategic antecedent to corporate decision-making. Existing studies on environmental scanning primarily utilize quantitative methods to investigate its effects on firm performance and knowledge enhancement, albeit with scant exploration via mixed-methods approaches. While the windows of opportunity constitute a critical focus of environmental scanning, their identification hinges on organizational

scanning behaviors. Current research predominantly focuses on categorizing Exploring opportunity window dimensions and analyzing their origins, the study pays scant attention to the integrated process of 'environmental scanning + opportunity window identification' as a continuous strategic mechanism.

This study addresses this gap by adopting a case study methodology to incorporate opportunity window identification—underpinned by environmental scanning—into the strategic decision-making process of corporate global expansion. Through the lens of opportunity window theory, we analyze three pivotal dimensions: Timing of internationalization, Target market selection and positioning strategies, Strategic alignment between organizational dynamic capabilities and decision-making frameworks. By synthesizing these elements, this research elucidates the critical role of opportunity window theory in shaping effective global expansion strategies, offering a systematic framework to decode how firms transform environmental insights into actionable overseas deployment plans.

Research Design

Research Methodology

Considering the complexity of the above-mentioned research question, we conducted a longitudinal single-case study approach, justified by the following considerations: The research focuses on the procedural question of 'how new energy vehicle (NEV) enterprises implement comprehensive global expansion strategies by capitalizing on opportunity windows', which naturally fits within the framework of case study methodology. The identification of internationalization timing and the phased, iterative process of seizing domestic and global opportunity windows require longitudinal analysis. An exploratory longitudinal single-case design serves to facilitate: Tracking strategic choices throughout various phases of opportunity windows, Performing a comprehensive multidimensional analysis of pivotal events, Identifying the fundamental determinants that underpin successful corporate globalization. This approach enables a systematic deconstruction of how firms dynamically synchronize external opportunity recognition with internal strategic execution, providing granular insights into the nexus between environmental scanning, capability orchestration, and global market penetration.

Case Selection and Data Sources

BYD Co., Ltd. in Shenzhen was selected as the case subject of this study, adhering to the following criteria: a. Typicality Principle. BYD epitomizes the successful globalization of Chinese independent automotive brands. As a pioneer in China’s NEV industry, it offers critical insights into identifying internationalization timing, capturing multidimensional opportunity windows, and achieving higher-tier growth amid the sector’s transition from labor-intensive manufacturing to high-end, intelligent, and green transformation. b. Data Sufficiency Principle. Founded in 1994 and listed on the Hong Kong Stock Exchange (2002) and Shenzhen Stock Exchange (2011), BYD maintains high visibility globally, ensuring abundant publicly available data for rigorous analysis.

To fulfill the triangulation requirements of case study methodology, this research integrates multi-source data: a. Primary Corporate Disclosures: Official website announcements, annual reports, and press releases from BYD’s authorized media channels. b. Academic and Media Publications: Peer-reviewed articles from databases (e.g., CNKI) and authoritative industry reports. c. Third-party Verification: Public interviews, news reports (via Baidu, Zhihu), and analyses by consulting agencies. This multi-layered data collection strategy ensures informational diversity and cross-validation, enhancing the study’s reliability and validity.

Variable Measurement

In the variable measurement process, this study adopts definitions that best align with case data characteristics to operationalize three core constructs: Environmental Scanning +Windows of Opportunity, Dynamic Capabilities, Global Expansion Modes. The measurement framework is detailed in Table 1 below.

Table 1: Constructs, Measurement Variables, and Keyword Lis

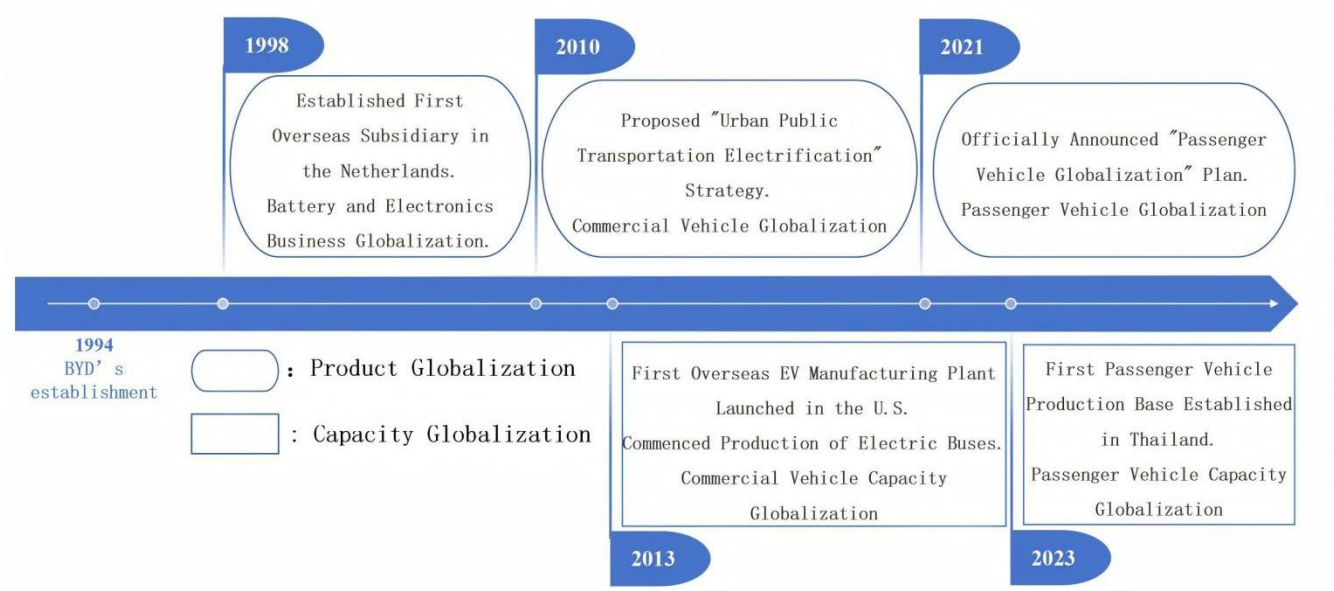
Construct	Measurement Variables	Keywords	Key References
Environmental Scanning + Windows of Opportunity	ES + Technological Window	Public patent information, domestic/international technical standards, disruptive technologies	(Shen et al., 2016; Liu et al., 2024)
	ES + Demand Window	Shifts in consumer preferences, purchasing power fluctuations	
	ES +policy / Institutional Window	Industrial policy guidelines, tax subsidies, international agreements, regulatory acts	
Dynamic Capabilities	Absorptive Capacity	Strategic M&A, technology/talent acquisition, knowledge conversion	(Zhou et al., 2024)
	Adaptive Capacity	Organizational flexibility, resource integration/reconfiguration, anticipatory decision-making	
	Innovative Capacity	R&D investments, product innovation, market penetration strategies	
Global Expansion Modes	Product Globalization	Trade partnerships, direct/indirect exports	(Tang, 2022)
	Capacity Globalization	Overseas plant construction, cross-border investments and acquisitions	

Key Milestones in the Case Firm's Global Expansion

BYD has cultivated its "Product Globalization" and "Capacity Globalization" strategies for over three decades, with critical milestones in its global industrial layout illustrated in Figure 1.

BYD (Build Your Dreams) was founded on November 18, 1994. In 1998, BYD set foot in the Netherlands with its inaugural overseas subsidiary, signaling the dawn of its global expansion. In 2010, BYD embarked on a strategic shift towards 'electrifying urban public transportation', successfully venturing its commercial vehicles into international markets. In 2013, BYD established its inaugural overseas electric vehicle manufacturing facility in California, USA, focusing on the production of the all-electric bus model K9. In 2021, BYD chose Norway as its European launchpad for passenger vehicle exports. In March 2023, the company held a groundbreaking ceremony for its first overseas passenger vehicle production base in Thailand. By December of the same year, BYD announced plans to construct a new energy vehicle (NEV) production base in Szeged, Hungary, progressively securing a strategic foothold in the global passenger vehicle market.

Figure 1: Key Milestones of BYD's Global Industrial Expansion



From its initial battery product exports in 1998 to achieving full-scale PV capacity globalization by 2023, BYD has systematically leveraged latecomer advantages by seizing technological, market, and institutional windows of opportunity amid global shifts. Strategic initiatives have significantly expedited BYD's evolution from a component supplier to a globally recognized leader in the New Energy Vehicle (NEV) ecosystem.

Case Analysis and Key Findings

BYD's "Product Globalization" Strategy

Globalization of BYD's Battery and Electronics Business

In 1994, the founder of BYD, Wang Chuanfu identified a critical event through environmental scanning: Japan's discontinuation of nickel-cadmium battery production. Recognizing this as an unprecedented window of demand opportunity for Chinese battery manufacturers, he mobilized R&D efforts to master nickel-cadmium battery technology, laying the foundation for BYD's battery and electronics business. By 1997, amidst the trend of plummeting global battery prices triggered by the Southeast Asian financial crisis, BYD ingeniously implemented a "technology-for-market strategy", capturing 40% of the global nickel-cadmium battery market within three years and achieving annual sales exceeding 100 million CNY.

Drawing on insights from environmental scanning, including event-trend correlations and experiences gained from success in the Chinese market, BYD expanded globally by establishing subsidiaries in the Netherlands (1998) and the United States (1999), and began exporting mobile phone batteries and electronic components. Table 2 outlines the timeline of BYD's battery and electronics product globalization.

Table 2: Battery and electronics product globalization of BYD

Time Period	Typical Supporting Data	Core Category	Main Category
1994-1999	1. Japan announced the discontinuation of domestic nickel-cadmium battery production. 2. Became a supplier for companies like *Daba* and gained prominence in competition with industry giants (e.g., Sanyo), significantly enhancing global brand influence. 3. Transitioned battery technology from nickel-cadmium to nickel-metal hydride and lithium-ion batteries, pioneering the development of lithium-ion battery production lines.	ES +Demand Window ES +Technological Window	Environmental Scanning + Windows of Opportunity
	1. Established a European subsidiary in the Netherlands (1998), focusing on OEM businesses such as mobile phone batteries and components. 2. Founded a North American subsidiary in Los Angeles (1999), specializing in mobile phone battery sales.	Product Trade/OEM Business	Product Globalization

Globalization of BYD's Commercial Vehicles

In 2010, BYD's commercial vehicle division utilized its "7+4" Full Market Strategy Framework, giving priority to new energy buses and coaches, thereby widely implementing electric vehicle (EV) technologies in road transportation. In November of that year, the company introduced the innovative "Urban Public Transportation Electrification" solution, with the objective of reducing energy consumption and mitigating urban pollution resulting from traditional public transit systems.

As of December 2024, BYD's new energy commercial vehicles—represented by its electric buses—have penetrated six continents, more than 100 countries and regions, and over 400 cities. This expansive global presence demonstrates how "environmental scanning + windows of opportunity" have empowered BYD to Monitor emerging trends through environmental surveillance and assess the impact of situational shifts on strategic decision-making. Table 3 outlines key milestones in BYD's commercial vehicle globalization (partial).

Globalization of BYD's Passenger Vehicles

Amid the centenary global transformation and the rapid disruption of the automotive industry in 2021, spurred by China's dual-carbon policy objectives, BYD successfully unleashed its accumulated strategic momentum across four core sectors: automotive, rail transit, new energy, and electronics. The passenger vehicle division embarked on a golden age marked by technological innovation, product upgrades, and market expansion.

Capitalizing on Norway's institutional and the windows of market opportunity—including world-leading NEV adoption rates, abundant hydro-power resources, tax incentives, and road tax exemptions—BYD forged a strategic alliance with RSA Automotive Dealer Group. In May 2020, it entered the Norwegian market with the Tang EV as its flagship model. Subsequently, in May 2021, BYD formally launched its "Passenger Vehicle Globalization Strategy", accelerating NEV deployment across global markets. Table 4 outlines key milestones in BYD's Passenger Vehicle Globalization Milestones (Partial).

Table 3: BYD's commercial vehicle globalization (partial)

Time Period	Typical Supporting Data	Core Category	Main Category
2008-2019	1. Accelerated internationalization since 2008, coinciding with global efforts to address resource constraints. 2. Capitalized on growing global sustainability awareness and institutional opportunities by aligning with the Belt and Road Initiative, establishing branches and production bases along key routes.	ES +Institutional Window	Environmental Scanning + Windows of Opportunity
	1. Pioneered core technologies: "Three Electric" systems, wheel-side drive technology, and Blade Battery. 2. Deepened R&D in electric buses and advanced globalization through the acquisition of Sanxiang Bus.	ES +Technological Window	
	1.Electric buses offered dual advantages in economic efficiency and social impact as urban transit solutions. 2. Prioritized B2B markets (public transit) over B2C markets (passenger vehicles) to leverage cost-effectiveness and build global brand recognition. 3. Actively captured international markets by addressing stringent environmental regulations and high battery costs.	ES + Demand Window	
	1. 2011: Exported K9 electric buses to the U.S. 2. 2012: Secured 700 electric bus orders from Israel; orders from Finland's Veolia Transport; signed LOI with Windsor, Canada for 10 electric buses; delivered Green-city buses to Uruguay. 3. 2013: K9 debuted in London; obtained EU WVTA certification for unrestricted EU sales; showcased buses in the Netherlands. 4. 2014: K9 launched in Australia, completing a five-continent footprint. 5. 2015: Partnered with Thailand's Loxley Group on K9/e6 deployments ("Thailand Bus Electrification Strategy"); entered Tokyo, Japan; unveiled the world's first pure-electric double-decker bus in London; signed green transit agreements with Denmark, Singapore, and Chile. 6. 2016: Secured orders in Indonesia and Brazil; supported the Olympics with Africa's first all-electric fleet. 7. 2017: Delivered electric buses/trucks to California; won the Netherlands' largest mid-size electric bus order; deployed fleets in Italy and Israel. 8. 2018: Expanded to Norway, South Korea, Chile, Germany, and Hungary; launched first electric bus fleets in Egypt, Portugal, and Denmark.	Commercial Vehicle Trade /Direct Export	Product Globalization

	9. 2019: Secured orders in Argentina; debuted electric trucks in Spain; delivered electric forklifts to Australia; introduced electric sanitation vehicles in Silicon Valley.		

Table 4: BYD Passenger Vehicle Globalization Milestones (Partial)

Time Period	Typical Supporting Data	Core Category	Main Category
2020 -Present	Norway's high NEV adoption rate, abundant hydropower resources, and institutional incentives (e.g., 25% VAT exemption, reduced road taxes) created a favorable institutional window. Partnered with RSA Alliance to launch the BYD Tang EV in Norway.	ES +Institutional Window	Environmental Scanning + Windows of Opportunity
	The E6 pure electric and F6DM dual-mode EVs featured BYD's self-developed DM electric system powered by iron-phosphate batteries, overcoming challenges in repeated charging and household socket compatibility.	ES +Technological Window	
	Israel's compact geography, mature charging infrastructure, and high market readiness presented a strategic market window.	ES +Demand Window	
	1.May 2021: Announced the "Passenger Vehicle Globalization" plan, initiating global NEV expansion. 2. July 2022 onward: NEV passenger vehicles entered Japan, Germany, Australia, Brazil, Thailand, and others. 3. October 2022: Partnered with Shell to provide access to 300,000 charging points in Europe. 4. 2023: penetrated 59 countries/regions globally, with exports surging 337%, ranking first among Chinese brands.	Passenger Vehicle Globalization	Product Globalization

Through over a decade of brand equity building and technological iteration, coupled with its proven expertise in commercial vehicles, BYD rapidly established a global passenger vehicle sales network. Since July 2022, its NEV passenger vehicles have successively entered markets including Japan, Germany, and Australia. At the Paris Motor Show, BYD partnered with Shell to announce access to 300,000 charging points across Europe, propelling the accelerated evolution of its globalization strategy.

BYD's "Capacity Globalization" Strategy

Guided by its profound understanding and precise identification of multidimensional windows of opportunity—spanning current "events" and future "trends" in the NEV market—BYD has strategically deployed production capacities overseas. By leveraging technological advancements, cost reductions, policy incentives, market access, shifting consumer demands, and supply chain diversification, as demonstrated by BYD's global expansion and cost control strategies, BYD has rapidly ascended in the global NEV market through advanced experience absorption,

resource optimization, and innovation enhancement. Table 5 outlines key milestones in BYD's capacity globalization (partial).

Table 5: BYD Capacity Globalization Milestones (Partial)

Globalization Phase	Time	Location	Key events
Commercial Vehicle Capacity Globalization	2013	United States	Established first overseas electric bus (K9) factory in California—the first wholly Chinese-funded NEV factory.
	2014	Brazil	Built electric bus factory; partnered with local bus manufacturer Marcopolo for local assembly in 2015.
	2016	Hungary	Constructed bus factory and R&D center in Komárom for electric truck production.
	2017	France	Launched electric bus plant in Beauvais, operational by 2018.
		Ecuador	Invested in pure-electric bus factory, deepening bilateral NEV collaboration.
		Morocco	Built factory in Tangier (operational 2021) producing batteries, large EVs, and monorail trains.
	2018	Chennai, India	Commenced production of K7/K9 electric bus batteries and chassis.
	2023	Mexico	Supplied electric bus chassis for localized assembly via Marcopolo partnership.
Passenger Vehicle Capacity Globalization	2023	Thailand	Held groundbreaking ceremony for first overseas PV production base (annual capacity: ~150,000 units).
		Uzbekistan	Launched joint venture under Investment Agreement for EV/Hybrid Vehicle and Component Production; Phase 1 produces Chazor and Song Plus; targets 300,000 annual capacity.
		Hungary	Initiated NEV production hub in Szeged City, Hungary—BYD's first EU-based manufacturing facility.
	2024	Indonesia	Broke ground on $1.3 billion plant with 150,000-unit annual capacity.
		Brazil	Began construction of mega-production complex (3 plants) in Camaçari, Bahia State, targeting 150,000 PVs annually.

Globalization of BYD's Commercial Vehicle Production Capacity

The globalization of BYD's commercial vehicle production capacity—driven by demand orientation, cost efficiency, favorable policy incentives, and effective risk mitigation—emerged as an inevitable outcome of its comprehensive environmental scanning to exploit multidimensional opportunity windows. In May 2013, marked by the groundbreaking of BYD's electric vehicle factory in Lancaster, California, marking the entry of this initiative into a strategic upgrade phase.

BYD's selection of target countries for production capacity deployment hinges on three criteria. Industrial Infrastructure: Host countries must possess automotive manufacturing foundations, including skilled labor,

complete supply chains, and mature industrial capabilities. BYD often leverages idle production capacity through third-party acquisitions to reduce costs—exemplified by its factories in Thailand and Brazil. Policy and Geopolitical Alignment: Target markets should demonstrate clear governmental support for EVs, political stability, and China-friendly diplomatic relations. Regions prioritized include Southeast Asian countries, Central and Eastern European nations, and Latin American markets like Mexico and Brazil. Emerging Market Advantage: Developing countries lack dominant domestic car brands, which provides an opportunity for BYD to rapidly capture market share through localized production.

Table 6: Key Behavioral Evidence of BYD's Dynamic Capability Enhancement and Core Advantage Transformation

Globalization Mode	Construct	Measurement Variables	Key Behavioral Evidence	Implementation Path & Advantage Transformation
Product Globalization	Absorptive Capacity	Technological Absorption	1.Imitative Innovation: The first model, Flyer, reverse-engineered from the Suzuki Alto by Shaanxi Qin Chuan Auto; the best-selling F3 model derived from the Toyota Corolla. 2. Integrated Innovation: Established JVs with Daimler and San Xiang Bus; partnered with Beijing Institute of Technology and Singapore's A*STAR for technical knowledge. 3. Independent Innovation: Dual-platform strategy (BEV/PHEV), world-leading "Three Electric" technologies, Blade Battery, IGBT4.0 chips, and DM-i Super Hybrid.	Identified cross-industry technological opportunities (battery-to-auto), applied electronics expertise to NEV commercialization, achieved leapfrog development via M&A, technology acquisition, and resource reconfiguration.
		Market Absorption	1. Produced 6 million NEVs by November,2023; exported 252,000 NEVs in 2023 (+457.66% YoY). 2. Captured >50% U.S. electric bus market share (2020); 20% European NEV market share (2023), ranking global No.1.	
	Adaptive Capacity	Market Adaptation	Product Diversification: a. Portfolio spans EVs, PHEVs, ICEVs to meet diverse market demands. b. Customized R&D for regional driving habits and preferences.	Institutional agility to align with sustainability mandates and social
		Institutional Adaptation	1.Economic Adaptation: Leveraged "dual-carbon" policy windows to globalize NEVs.	

			2. Social Adaptation: "People-oriented" HR policies; BYD Charity Foundation (est. 2010) for tech-driven poverty alleviation. 3.Environmental Adaptation: Full-cycle battery ecosystem (production -recycling-reuse); "Cool the Earth by 1°C" initiative; carbon management systems aligned with global decarbonization.	responsibility imperatives.
Capacity Globalization	Innovative Capacity	Organizational Culture Adaptation	Adopted "4+4 Strategy" (4 SUVs + 4 sedans) with region-specific branding and marketing.	Localized branding to reduce costs and enhance cultural resonance.
		Product Innovation	Disruptive product iterations: Expanded lineup with four sub-brands (BYD, Denza, Yang Wang, Fang Cheng Bao) covering premium markets.	Rapid response to market and techno -logical windows of opportunity.
		Technological Innovation	1.Vertical integration from Blade Battery to e-Platform 3.0 and four-motor "Yi Sifang" systems. 2.Filed 37,869 Chinese patents and 10,192 international patents by Dec 2023 (Source: BYD 2023 CSR).	Sustained R&D investment to secure technological leadership.
	Absorptive Capacity	Experience Absorption	Adopted international best practices in production management.	Enhanced overseas production efficiency and cohesion through cross-cultural talent integration.
		Talent Absorption	Recruited and trained global talent for overseas operations.	
		Supply Chain Absorption	Integrated global suppliers for stable raw material and component sourcing.	
	Adaptive Capacity	Market Adaptation	1. Global Layout: 30+ industrial parks across six continents. 2.Localized Production: Tailored manufacturing to regional regulations. 3. Full-chain Integration: Synergized R&D, procurement, and sales to establish local EV dominance.	Built closed-loop industrial chains (upstream materials →midstream components→ downstream vehicles) for synergistic advantages.

	Organizational Structure Adaptation	Restructured in 2021: merged PV/CV sales divisions into "Auto Sector," divided sales into four specialized business units.	Streamlined operations to accelerate product lifecycles and channel optimization.
	Organizational Culture Adaptation	Fostered cross-cultural cohesion among global teams.	Leveraged cultural diversity to create a "flywheel effect" of soft power.
Innovative Capacity	Technological Innovation	1. Deployed advanced production tech in overseas plants. 2. Collaborated with global R&D institutions.	"Foundational+ Competitive" resource allocation model for efficiency gains.
	Managerial Innovation	Optimized processes using international management systems.	

Globalization of BYD's Passenger Vehicle Production Capacity

In March 2023, BYD held a groundbreaking ceremony for its first overseas passenger vehicle (PV) production base in Thailand, marking a new chapter in its global expansion. BYD's selection of Thailand was driven by the country's solid automotive industrial base and manufacturing prowess, along with a keen eye for institutional and market opportunities in Thailand's NEV sector. With policy incentives like the development of charging infrastructure, smart grid construction, and tax reductions for NEVs, Thailand's NEV market has expanded rapidly, exerting considerable market pull. Geographically, Thailand's strategic positioning—with a long coastline, proximity to China (north) and ASEAN nations (south), and access to over 20 international ports—provides unparalleled export advantages. Notably, Thailand's low-trade-barrier agreements with Japan and Australia position it as a potential NEV hub in Southeast Asia, facilitating BYD's strategic advancement.

In December 2023, BYD announced plans to build an NEV PV production base in Szeged, Hungary, becoming the first Chinese automaker to set up a PV manufacturing plant in the EU. This move underscores BYD's commitment to the European market and its acute awareness of global NEV opportunity windows. As an EU member, Hungary boasts convenient transportation networks, a robust industrial base, and a favorable business environment, serving as a strategic base for BYD to further penetrate the European marketing.

Enhancement of BYD's Dynamic Capabilities and Transformation of Core Globalization Advantages: BYD's strategic transition from 'product globalization' to 'capacity globalization' fundamentally reflects a dynamic adaptation to global industrial restructuring trends. Its absorptive capacity enables rapid assimilation of global advanced technologies and management practices; its adaptive capacity allows agile strategic adjustments to navigate complex markets; and its innovative capacity drives breakthroughs in products, technologies, and services. BYD's acute sensitivity to technological trends, market dynamics, and institutional shifts underpins its global competitive edge. Table 6 outlines key behavioral evidence of BYD's dynamic capability enhancement and core advantage transformation.

Conclusion

This study employs an exploratory single-case methodology to uncover critical determinants of successful corporate globalization. Our findings demonstrate that acute market insights enable firms to identify windows of opportunity and respond to global demands, while enhanced dynamic capabilities facilitate opportunity conversion and core advantage transformation, ensuring effective implementation of globalization strategies. The primary conclusions are as follows: First, environmental scanning serves as an indispensable precursor to strategic decision-making in globalization. By integrating qualitative analysis, this study highlights how environmental scanning drives opportunity window identification and strategic alignment. Through systematic scanning, firms gain comprehensive insights into international market dynamics, competitive landscapes, and regulatory shifts, enabling them to seize favorable conditions, mitigate risks, and substantiate overseas expansion decisions.

Second, windows of opportunity discovery act as the driving force for strategic choices. This research extends the application of opportunity window theory to corporate globalization strategy formulation. Successful internationalization demands acute opportunity sensitivity—identifying latent market potentials through environmental scanning. Such identification not only shapes the timing and target markets of globalization but also determines market positioning strategies and the strategic fit between dynamic capabilities and organizational decisions. Third, continuous optimization of dynamic capabilities is imperative for adapting to global market volatility. Firms must perpetually refine their competitive edge through product innovation, technological breakthroughs, and process reengineering, thereby achieving creative transformation of opportunity windows into sustainable advantages.

The findings of this study offer practical guidance for Chinese new energy vehicle (NEV) enterprises to advance internationalization and achieve sustainable development. Initially, enterprises ought to augment their investment in environmental scanning and establish formalized systems to meticulously monitor and dissect external factors, such as international market trends, competitive terrains, and regulatory changes, thereby furnishin comprehensive and precise insights for their global expansion strategies. Second, enterprises must develop a keen market foresight by building robust information collection and analysis systems to enhance the accuracy and timeliness of opportunity window identification. Third, firms need to continuously adapt and enhance their dynamic capabilities in response to global market evolution and internal growth imperatives. Fourth, strategic globalization decisions must rigorously evaluate the alignment between identified opportunity windows and dynamic capabilities. Through scientific and rational strategic planning, firms can seize favorable conditions, mitigate risks, and achieve stable overseas growth.

First, Enhance the Policy Support System. Governments should formulate specialized policies to support the international expansion of the new energy vehicle (NEV) industry, encompassing financial subsidies, tax incentives, and financial support. For instance, providing capital subsidies for NEV enterprises establishing overseas production facilities could reduce internationalization costs and risks. Strengthen the coordination and integration of industrial policies, trade policies, and diplomatic strategies to create synergistic policy effects. Diplomatic channels should be leveraged to foster favorable international conditions, including enhanced intergovernmental collaboration with key target markets and the negotiation of bilateral/multilateral agreements, thereby securing institutional safeguards for overseas investments and market penetration.

Second, Strengthen Public Services. Relevant government departments should establish an NEV industry internationalization information service platform to provide enterprises with overseas market intelligence, regulatory frameworks, and technical standardization requirements, enabling timely responses to market dynamics.

Implement talent development and recruitment programs to cultivate professionals in NEV-related fields, while incentivizing overseas high-skilled experts to contribute to domestic innovation ecosystems. This dual approach ensures human capital reinforcement for global expansion initiatives. Third, Promote Industrial Collaboration. Governments should facilitate synergistic cooperation across the NEV industrial chain to harness cluster advantages. Encourage component suppliers to elevate product quality and technological sophistication, thereby bolstering the competitiveness of vehicle manufacturers in global markets. Foster industry-university-research partnerships to advance R&D in critical generic technologies (e.g., solid-state batteries, intelligent driving systems), enhance indigenous innovation capabilities, and establish a technological foundation for international market penetration.

This study has the following research limitations and shortcomings: First, this paper relies solely on third-party public data collected from corporate websites, databases, and related platforms for analysis. The research content may not be comprehensive, and there may be discrepancies in data analysis compared to the actual situation of enterprises. Second, this study adopts a single-case analysis approach, and the generalizability of the analytical conclusions may be inferior to that of multi-case comparative analyses.

Given the limitations of single-case analysis in generalizability, future studies should select multiple representative new energy vehicle (NEV) enterprises as research subjects for comparative multi-case analysis. By systematically contrasting similarities and differences in internationalization strategies, opportunity window utilization, and dynamic capability deployment across enterprises, researchers can more profoundly reveal universal patterns and critical determinants underlying the globalization of the NEV industry, thereby enhancing the generalizability of research findings. As for Research methodology. Future investigations could further integrate quantitative methodologies such as statistical analysis and econometric modeling. Large-scale quantitative analysis of corporate data would enable validation of conclusions derived from case studies, thereby providing stronger empirical support for theoretical frameworks. Simultaneously, the application of quantitative models could predict developmental trajectories and potential influencing factors in NEV industry globalization, offering enterprises and policymakers a more forward-looking decision-making basis.

Declaration

This is to declare that this manuscript is an original work and has not been submitted for publication elsewhere.

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References

Aguilar, F. J. (1967). Scanning the business environment.

Auster, E., & Choo, C. W. (1993). Environmental scanning by CEOs in two Canadian industries. Journal of the American society for information science, 44(4), 194-203.

Bedford, D., & Harrison, F. (2015). Leveraging environmental scanning methods to identify knowledge management activities in transportation. Journal of Knowledge Management, 19(3), 579-592.

Chen J.T. China occupies the high ground of automobile industry competition in the new century--an analysis based on new energy vehicles going to sea[J]. Culture,2023,(01):8-11+158.

Haase, H., & Franco, M. (2011). Information sources for environmental scanning: do industry and firm size matter?. Management Decision, 49(10), 1642-1657.

Lee, K., & Malerba, F. (2017). Catch-up cycles and changes in industrial leadership: Windows of opportunity and responses of firms and countries in the evolution of sectoral systems. Research Policy, 46(2), 338-351.

Liao, J., Welsch, H., & Stoica, M. (2008). Environmental turbulence and scanning behavior: the moderating effects of organizational maturity. Journal of Small Business Strategy (archive only), 19(1), 17-34.

Liu H.M, Xiong Q.Y, Jiang Y.T el. Environmental Scanning, Windows of Opportunity and Disruptive Innovation Mode Selection of Later-Come Enterprises: A Case Study on Geely and BYD [J]. Journal of Intelligence,2024,43(02):192-199+207.

Ma L., Gao J., Zhong W.J. Digitalization Empowers Chinese Advanced Manufacturing Companies to Catch up with Technology--Window of Opportunity Perspective based on Dynamic Capabilities[J]. Science of Science and Management of Science &Technology, 2023,44(10):131-151.

Maree C． Environmental scanning…what it is and how to do it. [2010-06-20].

Mathews, J. A. (2005). Strategy and the crystal cycle. California Management Review, 47(2), 6-32.

Ngamkroeckjoti, C., & Speece, M. (2008). Technology turbulence and environmental scanning in Thai food new product development. Asia Pacific Journal of Marketing and Logistics, 20(4), 413-432.

Peng X.M, Yao L.T. Window of Opportunity, Dynamic Capability and Latecomer Firms' Technological Catch-up[J]. Science of Science and Management of Science &Technology, 2019,40(06):68-82.

Perez C, Soete, L. (1988). Catching up in technology: entry barriers and windows of opportunity.

Shen T el. Research on the Role of Environmental Scanning on Enterprise Knowledge Innovation[J]. Information Studies: Theory &Application, 2016,39(3):47-51.

Shi X.X, Zhao Y.H. Governmantal Empowerment, International Cooperation and High-quality Development of Overseas Enterprises[J]. On Economic Problems,2024, (08):103-110.

Teece, D.J., Pisano, G., & Shuen, A.(1997). Dynamic capabilities and strategic management. Strategic management journal, 18(7), 509-533.

Wang J. Challenges and coping strategies for high-quality development of China's electric vehicle industry under technological change[J]. Enterprise Economy,2024,43(09):15-24.

Wang, C. L., & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. International journal of management reviews, 9(1), 31-51.

Wu X.B. el. How Do Latecomers Transform from Catch-up to Beyond Catch-up? A Longitudinal Comparative Analysis of Two Cases Based on Window of Opportunity Perspective[J]. Journal of Management World,2019,35(02):151-167+200.

Yang L., He X., Gu H.F. Top Management Team's Experiences, Dynamic Capabilities and Firm's Strategy Mutation: Moderating Effect of Mnagerial Discretion[J]. Journal of Management World, 2020, 36(06): 168-188+201+252.

Zhang X.T. Research on the Development Status and Countermeasures of China's Overseas Enterprises Investment[J]. People's Tribune,2024, (13):54-58.

Zhong C. Empirical Study on the Impact of Competitive Environment Scanning on Corporate Competitive Advantage[J]. Library and Information Service,2013，57(11):100－105.

Zhou R., Tang F.X, Cao J.x el. Market Orientation, Dynamic Capability and Enterprise Strategic Performance: Comparative Study of Two Cases[J]. Journal of Management Case Studies,2024,17(01):56-71.