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Research on the Disruptive Innovation of NEV to the Traditional Automotive Industry from the Perspective of Business Models

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Abstract

Since its formal proposal, disruptive innovation theory has undergone more than two decades of improvement and evolution, exerting a profound influence on academic fields such as business and enterprise management. As the market share of New Energy Vehicles (NEVs) has gradually increased in recent years, people have noticed that traditional fuel vehicle enterprises seem to be struggling to cope with the pressure from new car-making forces. To analyze the mechanism of the dual drive of "technology + business model" and break through the transformation predicament of traditional automakers, this paper, relying on the disruptive innovation theory refined and expounded by Christensen in 2015, adopts methods such as systematic literature retrieval, case analysis, and comparative study, and selects typical international automakers such as Tesla, BYD, and Volkswagen as cases. Through conducting specific case studies on traditional energy and NEV enterprises worldwide, the author has distilled the intrinsic mechanisms of disruptive innovation and the development of the automotive industry, and then put forward breakthrough viewpoints. Research shows that the emergence of NEV represents a disruptive innovation for traditional automakers not only in terms of products but also in the entire business system. This makes it difficult for the decades of business models and management experience of traditional automakers to match the development logic of the new energy vehicle industry, and their long-accumulated business model advantages and management experience have been gradually weakened.

Keywords

business model, disruptive innovation, new energy vehicle, asymmetric motivation

1. Introduction

Christensen first proposed disruptive innovation theory in 1995 and systematically elaborated it in 1997 [1, 2]. In the subsequent two decades, his theory has been continuously supplemented and refined by various scholars. NEVs are undoubtedly a disruptive innovation, yet they did not originate from low-end or new markets. For example, Tesla has consistently positioned itself in the high-end NEV segment since its founding [3]. Schmidt & Druehl (2008) proposed the concept of "High-End Encroachment" [4], which means that disruption is not limited to low-end and new markets, but also includes high-end disruption. Meanwhile, King & Baatartogtokh (2015) also pointed out that this theory is inconsistent in practical applications [5]. Thus, Christensen himself also revised his theory in 2015 [6].

As a core driving force for the transformation of the global automotive industry, NEV has witnessed an explosive growth in its market penetration rate in recent years. According to the IEA's "Global EV Outlook 2026" report, in 2025, global sales of EV exceeded 20 million units, with a year-on-year growth of approximately 20%, accounting for 25% of global new vehicle sales (That is, for every four new vehicles, one of them is an electric car) [7]. Among them, China, as the largest market, accounts for nearly 55% of the total NEV sales. Chinese automakers have contributed approximately 60% of the global EV sales. The European market, affected by strict CO_2 emission standards, has seen its share of EV sales rise to 28%. The US market has remained relatively stable at around 10%. It is projected that global sales of EV will increase further to approximately 23 million units in 2026, with a market share close to 28%. This indicates that the impact of NEVs on the automotive industry will continue to expand in the future.

Based on this, this article aims to explore that the disruption of NEVs lies not only in their EV powertrain technology, but also stems from the business models as the core carrier to restructure the value network of the the ICE (Internal Combustion Engine) vehicle industry. Furthermore, it demonstrates how NEVs can achieve disruption through "high-end encroachment" and "evaluation dimension translation", enriching the academic research of this theory in the automotive industry, and thereby explaining the predicaments faced by traditional automakers when confronted with "asymmetric motivation" and "organizational inertia".

2. Evolution of Disruptive Innovation Theory and the Underlying Mechanism of Business Models

Before delving into the disruptive path of NEV for the ICE vehicle industry, it is necessary to first clarify the theoretical analysis framework of this article. This chapter will, based on the revised disruptive innovation theory by Christensen (2015) and combined with the demand-side value trajectory shift theory, construct an analytical model driven by "technology + model".

2.1 The Connotation and Evolution of the Disruptive Innovation Theory

Christensen first proposed the concept of "disruptive innovation" in 1995, and over the following three decades, he continuously revised the theory in response to the changes in the global business models. In order to accurately grasp the applicability of this theory in the NEV industry, it is necessary to systematically deconstruct its classic connotation, real paradoxes, and its evolution.

2.1.1 The Core Essence of the Classic Theory of Disruption

Within the framework of classical theory, disruptive innovation does not refer to a single technological breakthrough, but rather a strategic mechanism that breaks the existing market structure and competitive equilibrium. The classical theory has established two basic disruptive paradigms:

The first type is low-end disruption. That is, when the current industry leaders excessively pursue high profit margins, they often make their products overly meet the actual needs of the mainstream or low-end markets, thereby leaving an overlooked profit margin space. The disruptor, with sufficiently good performance, highly competitive low prices, and simpler operation features, initially establishes a foothold in the neglected low-end market, then gradually penetrates the high-end market along the technological trajectory, and ultimately undermines the foundation of the incumbent.

The second is "new-market disruption". The disruptor introduces completely new value dimensions (such as portability and ease of use), transforming "Non-consumers" who previously lacked the purchasing power or usage conditions into consumers of the new market. Thus, they create a completely new value chain that extends beyond the mainstream value network.

2.1.2 The Conflict Between the Paradox of Reality and Theory

With the explosion of global high-tech manufacturing, the classic theories have encountered serious paradoxes when explaining real business phenomena. Take Tesla's rise in the automotive industry and DJI's dominance in the drone sector as examples: These enterprises did not start by “entering from the lower end”, nor did they rely on “low quality and low price” to enter the peripheral markets. Instead, they directly entered the core areas of the mainstream market with high average transaction prices, high technical barriers, and even the status of high-end luxury goods, and they also achieved a complete disruption of the traditional ICE vehicle giants and the established drone enterprises.

This phenomenon has sparked intense debates within the academic community regarding the classic theories. King and Baatartogtokh critically pointed out that there is a significant inconsistency in the adaptation of the classic theory to real cases [5]; subsequently, Schmidt and Druehl proposed the “High-end Encroachment” model, demonstrating that disruptive innovation also has a penetration path from the high end to the low end [4].

2.1.3 The Revised Three Core Connotations

Realizing that the previous disruptive innovation theory deviated from reality, Christensen revised it in 2015 and deepened its core essence into the following three dimensions. The essence of disruption is a process. Christensen emphasized that disruption is not a product or technology that is invented at a specific point in time, but rather a dynamic evolutionary process that spans several years or even decades. This means that when evaluating the disruptive nature of NEV, one cannot merely compare its initial range or manufacturing process statically; instead, one must consider the long-term impact of its software and hardware ecosystem on the market and consumers. The second is a complete reinvention of the business model. Christensen pointed out that technological innovation per se does not inherently possess the nature of disruption. The essence of disruption lies in the deep integration of technological breakthroughs with completely new business models. The reason why disruptors can trigger “Asymmetric Motivation” in incumbents is that they have established a completely new profit model and evaluation dimension. If incumbents imitate this, it will lead to the collapse of their existing business model. Third, it distinguishes between disruptive innovation and radical innovation. Radical innovation (such as the iteration of EV powertrain technology, breakthroughs in LiDAR) merely implies an improvement in technical parameters. If it still occurs within the old value network of traditional car wholesale, 4S store distribution, and one-time hardware sales, then it is merely a routine upgrade for ICE vehicle giants. Only when the technological breakthrough emerges in a completely new business model that alters the transaction structure and profit logic of the industry, can it truly be regarded as a disruption of the original industrial system.

2.2 Demand-side Disruption

Professor Ron Adner shifted his perspective to the demand side [8]. He believed that the essence of disruptive innovation lies in the shift of its value trajectory. That is to say, this trajectory is not determined by technological breakthroughs, but rather reflects the transformation of the R&D paradigm (from a focus on production to continuous service and rapid iteration), which disintegrates the traditional OEMs. The author puts Professor Ron Adner's model on the NEV industry, according to which competition shifts to price or new attributes when traditional performance oversupply. That is, consumers have a very limited perception of the performance improvements of traditional ICE vehicles. Therefore, consumers will focus on new attributes instead. Traditional ICE vehicles focus on the “supply side of performance”, believing that as long as the engine power is stronger and the interior is more luxurious, they can attract more consumers. However, NEV manufacturers prefer the “demand side”. They have seized the new demand of consumers for cars as an extension of digital life [9]. In the NEV industry, this demand-side vision leads directly to the reconstruction of specific business scenarios. In the past, the performance of traditional ICE vehicles was fixed after delivery and began to depreciate as the car was used and worn out; For NEVs, consumers are always seeking better assisted driving and intelligent ecology, and manufacturers can usually continuously upgrade vehicles through OTA. Therefore, the vehicle transforms from a mere transportation hardware into a dynamic and evolving intelligent space.

The emergence of this new scenario is ostensibly based on software and algorithms, but fundamentally it has raised new requirements for enterprises' order management, new car's direct sales, full life-cycle services, and software pricing design. When technological progress activates new scenarios on the demand side, a single hardware upgrade cannot meet consumers' expectations, thus giving rise to a systematic reshaping of the technological carrier - "business model".

2.3 The Vehicle of Disruption: The Business Model

The coupling of technology and business model is the key carrier for achieving disruption. According to Professor Christensen's viewpoint, technology can only exert disruptive power when embedded in a new value network. NEV has constructed a profit model that is completely different from that of traditional OEMs through the car direct sales model and full life-cycle services. This deep integration of "technology + model" has triggered the asymmetric motivations of traditional enterprises. New energy vehicle manufacturers are willing to enter a completely new field, while traditional manufacturers find it difficult to compete with them due to Organizational Inertia.

3. Analysis of NEV Disruption Path from the Perspective of Business Model

3.1 Evaluation Dimension Translation

According to the demand-side theory proposed by Professor Ron Adner [8]. We can draw the following conclusion: When the performance of traditional products reaches saturation or even excess in the mainstream dimensions (such as engine power, etc.), consumers will shift their focus to a new dimension. In the NEV field, it has successfully achieved the transfer of evaluation criteria. Consumers have shifted their previous focus on hardware aspects such as engine power and stability to software and service [9]. New energy vehicle enterprises no longer get overly involved in the competition of traditional vehicle performance. Instead, they have shifted their criteria to Software-Defined Vehicles (SDV) [10].

Tesla, as a symbol of high-end disruption, has focused on software and intelligent experiences since its establishment. Within 18 months, it has carried out 124 OTA updates, continuously optimizing vehicle performance and adding new features, enabling the vehicle to be upgraded even after delivery [11]. Similarly, the new Chinese companies NIO and Xpeng have also strengthened this transition through the SDV strategy. NIO emphasizes "user-defined vehicles", relying on its Banyan intelligent system, continuously enhancing the intelligent cabin, ADAS functions and user experience through OTA updates, and transforming the vehicles into personalized digital living spaces [12]. Xiaopeng has focused on developing intelligent cabins and all-scenario interactions. Through the XOS intelligent cabin system and VLA2.0 AI model, it achieves a deep integration of the vehicle as a "mobile living space", and realizes rapid iteration through OTA [13]. These practices demonstrate that NEV enterprises have successfully shifted the evaluation dimensions from traditional hardware performance to software-defined intelligent experiences and continuous services.

Through OTA technology, the vehicle's performance can be continuously updated. For consumers, the car has transformed from an ordinary means of transportation into a second home that integrates smart terminals and a living space (a comprehensive new type of mobile carrier) [14]. More importantly, it causes the management and technical experience accumulated by traditional car manufacturers over several decades to depreciate rapidly under the new technological framework. At the same time, it also creates conditions for new energy vehicle manufacturers to make high-end entries and achieve disruptive innovation.

3.2 Reinvention of the Business Model

The integration of technology and business model is the key to achieving industry model disruption. According to Christensen's [6] revised theory, a single technological breakthrough alone cannot naturally trigger disruption; only when the technology is embedded in a completely new Value Network can it exert a disruptive effect. NEV's disruption of traditional industries not only occurs at the end-product level, but also encompasses the entire value chain of business model, including channels, profits, research and development, and supply chains.

3.2.1 D2C Model and Value Chain Flattening

The traditional OEM model is highly dependent on the 4S store system [15]. This sales network has problems such as redundancy in management and information asymmetry. The demands of consumers need to go through multiple layers of transmission before reaching the top management of the enterprises. Dealers, in pursuit of profits, may distort the true market demands. As a result, car manufacturers find it difficult to obtain market information in a timely manner, thus missing the best opportunity [16]. New energy vehicle manufacturers adopting the D2C model can effectively shorten the value chain [17]. That is, by reducing the number of middlemen, they achieve disintermediation and enhance the vertical integration capabilities of the vehicle manufacturers. More importantly, they directly connect with user demands and can promptly grasp the real user data flow, thereby transforming from simple sales to operation.

3.2.2 The Shift in the Profit Model

At the same time, NEV manufacturers have broken away from the traditional model of sustained profitability. Traditional car manufacturers usually place greater emphasis on the production and marketing of vehicles, meaning that services cease to be of concern to the manufacturers once the cars are sold. As a result, some 4S stores seek profits and even maliciously add traps in the after-sales terms, leading to a widespread stereotype among consumers that the after-sales service for traditional fuel vehicles is “unnecessary, time-consuming and labor-intensive”. When NEV automakers focus on providing long-term and continuous services, they have established a continuous cash flow through software subscriptions (FSD/autonomous driving subscriptions) and energy services (charging station networks). Consumers can freely choose according to their own circumstances, and the automakers can also provide efficient and cost-effective services in a transparent and open manner, thereby reconfiguring the profit logic.

3.2.3 Full-Stack Proprietary R&D Model

Channel flattening and profitability must rely on the transformation of key R&D processes. The traditional OEM R&D system deeply relies on the classic V-model and sequential waterfall [18]. This model is primarily driven by hardware development, with the development cycle typically lasting 3 to 5 years. Its core objective is to ensure the safety of tens of thousands of mechanical components during integration with an extremely low error rate. However, this long-cycle, low-frequency process exhibits significant organizational delays when confronted with software requirements that require frequent updates - due to the deep integration of software and hardware, any minor code modification will trigger a lengthy re-validation cycle for the entire vehicle hardware.

The difference is that NEV automakers have restructured their key R&D processes and introduced a development model of “software and hardware decoupling” and “full-stack proprietary R&D” [19]. That is, to separate the development, upgrade and maintenance processes of software and hardware, and not rely on external suppliers but instead conduct research and development entirely by one's own means. This enables NEV to evolve from the traditional distributed ECU (Electronic Control Unit) architecture in the EEA (Electrical/Electronic Architecture) framework towards a centralized architecture. It makes the chassis and other hardware components into standardized common platforms, while the software layers such as autonomous driving and intelligent cabin can be separated out for frequent testing and iteration. This not only facilitated the rapid iteration and update of vehicle functions, but also significantly reduced the overall development cost of the vehicle. In terms of the process, NEV car manufacturers have fully shifted to an internet-based agile development model [20].

3.2.4 The Networked Collaboration and Vertically Integrated Supply Chain Model

The supply chain of the traditional automotive industry is a solid “pyramid structure”. The traditional OEM at the top of the pyramid controls the entire vehicle manufacturing process through a series of strict hierarchies (such as Tier 1, Tier 2, etc.). In the era of internal combustion engine, Bosch, Continental and other giant Tier1 master the technology of core components. The management experience of traditional car companies is essentially contract management and lean logistics control for mature middlemen, and OEM itself lacks control over the underlying code and chip details [21].

NEV's disruptive innovation has completely shattered the existing value network and established a new supply chain model. In the face of new core values such as EV powertrain Technology and chips/algorithms, new energy vehicle manufacturers are moving towards deep vertical integration. For instance, BYD has achieved a complete closed-loop from lithium ore, batteries, semiconductor chips to vehicle manufacturing through its vertical integration strategy, significantly reducing the supply chain risks brought about by industrial uncertainties [22]. For non-core intelligent components, NEV has also changed the traditional supply-demand relationship. Car manufacturers have bypassed traditional Tier 1 suppliers and directly engaged in direct communication with the bottom-level chip architects and battery material experts. They have established a networked collaboration model with new ecological partners such as NVIDIA and CATL, achieving the flattening of the supply network.

3.2.5 Summary

In conclusion, the four dimensions of innovation - channels, profitability, research and development, and supply chain - collectively form a closed-loop system for the innovation of NEV business models. The flexibility of the R&D model ensures the realization of the translation of evaluation dimensions. The vertical integration and flattening of the supply chain guarantee the low-cost and high-efficiency supply of core resources; while D2C direct sales and software subscription achieve the final value realization and data loop.

4. The Predicament of Traditional Automakers

The failure of current industry giants is often not due to a lack of technical capabilities, but rather to the failure in management when they encounter new business systems. This chapter will introduce the theories of path dependence, asymmetric motivation and organizational ambidexterity, combined with the transformation practices of traditional auto giants such as Volkswagen and Toyota, and deeply analyze the internal mechanism of traditional OEMS in the transformation dilemma.

4.1 Asymmetric Motivation

Christensen pointed out that the key to successful disruption lies in the fact that the large enterprises “cannot or are unwilling” to respond. That is, when new forces and traditional giants face the same new technology or market, due to different interests and motivations, there is an unequal motivation gap.

In the automotive industry, this asymmetric motivation is particularly evident. Traditional automakers are confronted with a severe issue of value network entanglement: if they follow the D2C model, it will lead to the collapse of the existing extensive dealer system and legal disputes; if they fully shift to pure electric vehicles, it will directly erode the resources of the fuel vehicle department, which serves as the core source of cash flow [23, 24]. This inherent contradiction has led to the management of traditional car companies often adopting a defensive approach when making decisions, rather than truly pursuing innovation.

4.2 Channel Aspect: Taking Volkswagen as an Example

In terms of the channel model, the D2C direct operation model of new energy vehicle manufacturers can establish an efficient data loop. However, if traditional giants want to follow this model, they must first confront the strong resistance from the extensive network of authorized dealers. When Volkswagen launched the ID. series of pure electric vehicles in the European and Chinese markets, it attempted to bypass traditional dealers and establish a direct sales model with unified retail prices. This move immediately met with strong resistance from the traditional dealer groups [25]. Because this directly deprives dealers of their substantial profits from new car markups, financial distribution, and after-sales maintenance. Traditional OEMs have long relied on dealers to share the risks and financial pressures associated with inventory.

4.3 Profit Aspect: Taking Toyota Automobiles as an Example

In terms of the profit model, the fuel vehicle business remains the absolute cash flow pillar for traditional giants to this day. Meanwhile, the research and development of new energy is a huge project with high investment and a long cycle. The long-term doubts and delays of Toyota's management team regarding the comprehensive electrification strategy are a typical example of asymmetric motivation. For Toyota, if it were to abruptly divert hundreds of billions of capital from the highly profitable ICE and Hybrid Vehicles division and fully allocate it to the still unprofitable pure electric platform, it could lead to a deterioration in the current financial statements and trigger turmoil in the capital market [26]. This defensive strategy has led the management of traditional car companies to prefer extending the lifespan of ICE Vehicles rather than truly investing in disruptive business model innovations.

4.4 Organizational Ambidexterity

Since March (1991) first proposed the concept of organizational ambidexterity [27], its theory has been continuously refined and developed. Tushman et al. were the first to elevate ambidexterity to a theoretical level [28], stating that organizations need to both adapt to environmental changes (exploratory) and manage current demands (applied). The failure of traditional automakers in their transformation was essentially the result of an imbalance between exploratory and applied aspects.

The organizational structure of traditional ICE vehicle manufacturers was designed to minimize mechanical manufacturing defects and ensure long-term profitability (applied nature). However, this nature is extremely difficult to be compatible with the rapid iteration and fault-tolerant capabilities required for internal software development (exploratory nature).When the giants allocate resources internally, the fuel vehicle department, based on higher actual profits, has greater influence, resulting in the electrification and softwareization departments often being relegated to a subordinate position and unable to obtain the structural support needed for a disruptive transformation. Eventually, they are unable to pursue their own breakthroughs.

When traditional giants attempt to simultaneously cater to both ICE vehicles and electric vehicles within the same organizational structure, the asymmetrical distribution of power will lead to a structural imbalance in resource allocation. Within the traditional OEMs, most of the key executives come from traditional engine engineering or marketing departments. Therefore, when making annual capital budgets, recruiting new talents, and allocating R&D resources, they instinctively tend to favor the fuel vehicle division that can generate immediate profits [29]. This has led to the newly established electric or digital departments not only failing to receive sufficient and uninterrupted budget support, but also being confined to traditional supplier management and KPI assessment methods. As a result, when traditional automakers face the offensive of new entrants, they not only struggle to leverage their own scale advantages, but also hinder their ability to achieve the ultimate disruption.

The most obvious example of this predicament is the restructuring turmoil of CARIAD, the software subsidiary of Volkswagen. To break away from technology outsourcing, Volkswagen established CARIAD in 2020, aiming to achieve full-stack proprietary R&D for intelligent connected vehicles and autonomous driving software. However, in actual operation, CARIAD has long been constrained by various interest groups within the internal ICE vehicle research institute of Volkswagen Group. The traditional hardware department is accustomed to the classic V-model and sequential waterfall model of development control that have lasted for several years, and is reluctant to accept the agile development culture of the Internet. Due to the intense conflict between the two organizational cultures, the R&D process became severely disrupted, projects were repeatedly delayed, and even led to a widespread software failure in the initial version of the Volkswagen ID. model, ultimately triggering a series of intense personnel changes at the top level of the Volkswagen Group [30].

5. Discussion

Based on previous studies on disruptive innovation and related theories in the NEV industry, the author was able to reveal the core position of the business model in the transfer of industry paradigms. However, there are still some key issues that are worthy of discussion.

Firstly, there is still controversy over the priority order between technological innovation and business model innovation. Although this article emphasizes that the business model is the carrier of disruption, it is important to note that the maturity of the “three electric” technologies (battery, motor, and electronic control) is the foundation for all business model innovations. Some scholars believe that without substantial advancements in solid-state batteries or advanced autonomous driving hardware, innovations such as the D2C model, software subscription, and continuous OTA updates may struggle to fully take effect. This viewpoint indicates that business model innovation does not exist independently of technological innovation; instead, it forms a complementary relationship with technological innovation. Secondly, regarding the transformation paths of traditional automakers, according to Christensen (2015), the mainstream academic community holds that current leaders, due to “Asymmetric Motivation” and the binding of value networks, find it extremely difficult to achieve self-disruption. They must break the organizational structure (such as establishing an independent EV division) in order to achieve regeneration. However, recently, the Volkswagen Group has adopted the CARIAD and platformization strategies, while Toyota has been making efforts to gradually shift from hybrid to pure electric. These actions indicate that some traditional giants are attempting to achieve “dual coexistence” within their existing organizational structures. Although the outcomes of these cases have not yet shown any significant results, they still pose a potential correction to the disruptive innovation theory – that in large enterprises with abundant resources, the scale effect and cross-departmental collaboration may partially alleviate the asymmetric motivation.

Finally, this study mainly focuses on the comparison between new players in the automotive industry for passenger vehicles and traditional automakers. However, it lacks discussion on commercial vehicles, special vehicles, and geopolitical factors in the context of global supply chain restructuring. This study has the following main limitations: Firstly, the data sources are mainly secondary literature and industry reports, lacking in-depth one-on-one interviews with executives of ICE vehicle manufacturers and NEV companies, making it difficult to capture the micro-mechanisms of internal organizational decision-making; Secondly, the research is mainly based on the phased data from 2025 to 2026.

6. Conclusion

This article systematically explores the disruptive innovation path of NEV for the ICE vehicle industry, enriching the application of Christensen's disruptive innovation theory in the high-end manufacturing sector from the perspective of business model. The following conclusions are drawn:

Firstly, this paper validates and expands the revised disruptive innovation theory proposed by Christensen (2015), clearly stating that the disruption of traditional automakers by NEV is not merely a technological substitution, but rather the result of the deep integration of technological innovation and business model innovation. As the core carrier, the business model not only encompasses new elements such as SDV, D2C and OTA , but also through reconfiguring the value network and consumer evaluation dimensions, creates an “asymmetric motivation” for traditional automakers, making it difficult for them to respond effectively.

Secondly, this study extracts NEV's unique path to achieve high-end disruption - “demand-focused construction + high-end entry.” By shifting the dimension of competition from traditional hardware performance to software service and digital life experience, the new forces have successfully avoided the first-mover advantage of traditional OEM in mechanical engineering, supply chain and channel network, and made use of organizational ambidexterity conflict and value network binding to realize the systematic reengineering of business model in the transformation blind area of traditional auto companies. Finally, this paper provides management practice reference for the digital transformation of traditional manufacturing enterprises. The research shows that it is difficult to cope with the disruption of business models solely by relying on technological catch-up, and traditional automobile companies must achieve leapfrog improvement in the new value network through the decoupling of organizational structure, the remodeling of channel model and the underlying reform of profit logic. Despite the progress made in this study, there is still room for further exploration. Future research can be carried out from the following directions: first, a multi-case longitudinal study is carried out to investigate the possibility of self-subversion of traditional automobile enterprises through organizational decoupling in different institutional environments; The second is to construct a multi-dimensional analysis framework to explore the evolution of NEV value network under the background of global supply chain restructuring; The third is to extend the research scope to commercial vehicles, logistics vehicles and emerging markets to verify the universality of the theoretical model proposed in this study. In short, the rise of NEV is not only a transformation of products and technologies, but also a systematic reconstruction of business models and organizational logic.

References

[1] Christensen, C. M. (1997). The innovator's dilemma: When new technologies cause great firms to fail. Harvard Business Review Press.

[2] Bower, J. L., & Christensen, C. M. (1995). Disruptive technologies: Catching the wave. Harvard business review, 73(1), 43-53.

[3] Hardman, S., Shiu, E., & Steinberger-Wilckens, R. (2015). Changing the fate of Fuel Cell Vehicles: Can lessons be learnt from Tesla Motors? International Journal of Hydrogen Energy, 40(4), 1625–1638. https://doi.org/10.1016/j.ijhydene.2014.11.149

[4] Schmidt, G. M., & Druehl, C. T. (2008). When is a disruptive innovation disruptive?. Journal of product innovation management, 25(4), 347-369.

[5] King, A. A., & Baatartogtokh, B. (2015, September 15). How useful is the theory of disruptive innovation? MIT Sloan Management Review, 57(1), 10–11. https://sloanreview.mit.edu/article/how-useful-is-the-theory-of-disruptive-innovation/

[6] Christensen, C. M., Raynor, M., & McDonald, R. (2015). 17. Disruptive innovation. Harvard business review, 93(12), 44-53.

[7] International Energy Agency. (2026). Global EV Outlook 2026. IEA. https://www.iea.org/reports/global-ev-outlook-2026

[8] Adner, R. (1999). A demand-based view of technology competition: Demand structure and technology displacement (Report No. ISIC-1999-01). Information Storage Industry Center, University of California, San Diego. https://escholarship.org/uc/item/18x3r4fm

[9] Hepp, D., Kellner, M., Jautelat, S., Guggenheimer, M., & Aloise, T. (2026, January 6). The automotive software and electronics market through 2035. McKinsey & Company. https://www.mckinsey.com/features/mckinsey-center-for-future-mobility/our-insights/mapping-the-automotive-software-and-electronics-landscape

[10] Deloitte. (2026). 2026 Global Automotive Consumer Study. https://www.deloitte.com/us/en/insights/industry/retail-distribution/global-automotive-consumer-study.html

[11] Koster, A., Arora, A., & Quinn, M. (2021, February 18). Chasing the software-defined dream car. Boston Consulting Group. https://www.bcg.com/publications/2021/software-transformation-in-the-automotive-industry

[12] March, J. G. (1991). Exploration and exploitation in organizational learning. Organization Science, 2(1), 71–87. https://doi.org/10.1287/orsc.2.1.71

[13] Tushman, M. L., & O'Reilly III, C. A. (1996). Ambidextrous organizations: Managing evolutionary and revolutionary change. California management review, 38(4), 8-29.

[14] Brem, A., & Nylund, P. (2023). Incumbents inertia in the automotive industry: Technological, market, and societal drivers of electric vehicle standardization. IEEE Transactions on Engineering Management, 1–8. https://doi.org/10.1109/TEM.2023.3336004

[15] Hepp, D., Kellner, M., Jautelat, S., Guggenheimer, M., & Aloise, T. (2026, January 6). The automotive software and electronics market through 2035. McKinsey & Company. https://www.mckinsey.com/features/mckinsey-center-for-future-mobility/our-insights/mapping-the-automotive-software-and-electronics-landscape

[16] Deloitte. (2026). 2026 Global Automotive Consumer Study. https://www.deloitte.com/us/en/insights/industry/retail-distribution/global-automotive-consumer-study.html

[17] Wendt, T. F., Winterhoff, M., Boyle, B. R., & Wilson, R. (2014, January). Rethink: Automotive retail networks (think:act STUDY). Roland Berger Strategy Consultants. https://www.rolandberger.com/en/Insights/Publications/Explaining-software-defined-vehicles.html

[18] Roland Berger. (2014, January). Rethink: Automotive retail networks. https://www.rolandberger.com

[19] Inampudi, S., Kramer, N., Maurer, I., & Simmons, V. (2019, January 23). As dramatic disruption comes to automotive showrooms, proactive dealers can benefit greatly. McKinsey & Company. https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/as-dramatic-disruption-comes-to-automotive-showrooms-proactive-dealers-can-benefit-greatly

[20] Chandran, J. (2023, July 3). Digital disruption hits new electric vehicle retailing as customers flock to convenience of online platforms. Frost & Sullivan. https://www.frost.com/growth-opportunity-news/digital-disruption-hits-new-electric-vehicle-retailing-as-customers-flock-to-convenience-of-online-platforms/

[21] Auto dealers confront legal battles over direct-to-consumer EV sales model. (2024, March 15). Daily Journal. https://www.dailyjournal.com/article/390635-auto-dealers-confront-legal-battles-over-direct-to-consumer-ev-sales-model

[22] Cataldo, L. (2025, January 2). Why dealers are opposed to direct-to-consumer sales. CarBuzz. https://carbuzz.com/dealers-opposed-direct-to-consumer-sales/

[23] Koster, A., Arora, A., & Quinn, M. (2021, February 18). Chasing the software-defined dream car. Boston Consulting Group. https://www.bcg.com/publications/2021/software-transformation-in-the-automotive-industry

[24] Eisele, P. (2025, February 20). P3: SW defined vehicles (Edition #1/2025). P3 automotive GmbH. https://www.p3-group.com

[25] Capgemini Research Institute. (2025, September). The software-driven mobility era: Beyond vehicles. https://www.capgemini.com/wp-content/uploads/2025/09/CRI_Software-Driven-Mobility-Final-Report.pdf

[26] Rizvi, A., Hepp, D., & Jana, P. (2025, July 15). Winning the automotive software development race. McKinsey & Company. https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/winning-the-automotive-software-development-race

[27] Lueth, K. L. (2026, March 4). 7 lessons manufacturers can learn from automakers in the era of software-defined everything. IoT Analytics. https://iot-analytics.com/7-lessons-manufacturers-can-learn-from-automakers-in-the-era-of-software-defined-everything/

[28] Aptiv. (2023, March 28). What is agile software development in automotive? https://www.aptiv.com/en/insights/article/what-is-agile-software-development-in-automotive

[29] Fenix. (2024). OEM vs. Tier 1 vs. Tier 2: Understanding the automotive supply chain. https://fenix-mfg.com/automotive-supply-chain-tiers/

[30] Reuters. (2023, October 27). Volkswagen plans job cuts, further launch delays at software unit -manager magazin. https://www.reuters.com/business/autos-transportation/volkswagen-wants-cut-2000-jobs-cariad-unit-manager-magazin-2023-10-27/

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Conflicts of Interest
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