ISSN: 2710-0723

Exploration of Business Management Practices for Third-Party Automotive R&D Institutions

-- A Dual-Cycle Development Perspective based on the Demand-Value End

Huiyun Wang*

China automotive technology and research center co. ltd., Tianjin, China

*wanghuiyun@catarc.ac.cn

Abstract

Against the backdrop of the automotive industry's transformation and upgrading toward intelligence, low carbon and connectivity, third-party automotive R&D institutions, as key players in industrial technological innovation, undertake the core functions of technological research and development, resource integration and industrial empowerment. At present, market competition in the industry is intensifying and policy supervision is increasingly sophisticated, rendering the traditional extensive business management model incompatible with the requirements of high-quality development. Optimizing the business management system and building an innovative development model have become an imperative for third-party automotive R&D institutions. From the perspective of the demand-value end and based on the core elements of collaborative management, this paper constructs a business management logic system rooted in demand, supported by organizational structure, and driven by business and projects as two wings. It divides the operation into two major modules: an internal lean management cycle and an external innovative development cycle, and identifies four core management levers: contract management, cost control, market development and capability iteration. Meanwhile, aligned with the four major directions of automotive technological development-intelligent connectivity, safety and reliability, user experience and energy conservation and low carbon-it analyzes the internal logic of the dual-cycle operation mechanism. The research finds that the lean control of the internal cycle is the foundation for the sustainable operation of institutions, while the market-technology linkage of the external cycle is the driving force for innovative development. The synergistic empowerment of the dual cycles can optimize enterprise resource allocation, enhance R&D service capabilities and strengthen market competitiveness. Combined with the current situation of the industry, this paper proposes targeted business optimization strategies, providing practical references for third-party automotive R&D institutions to improve their management systems and achieve high-quality innovative operations.

Keywords

Third-Party Automotive R&D Institutions; Business Management; Dual-Cycle Mechanism; Demand Value; High-Quality Innovation.

ISSN: 2710-0723

1. Introduction

1.1. Research Background

As China's automotive industry enters a new stage of high-quality development, the technological iteration of new energy vehicles and intelligent connected vehicles continues to accelerate, driving the industry's transformation from traditional mechanical manufacturing toward intelligence, low carbon and integration. The state has successively issued industrial development plans, energy conservation and emission reduction policies and scientific and technological innovation support regulations, which have defined the development direction for the automotive R&D industry while raising industry entry standards[4]. To reduce R&D costs and focus on core businesses, complete vehicle manufacturers have gradually outsourced non-core R&D work, leading to the continuous expansion of the scale of the third-party automotive R&D industry[2].

At present, the number of domestic third-party automotive R&D institutions is growing, but most suffer from inadequate management systems, irrational resource allocation, technological homogenization and a single profit model. Some enterprises prioritize technological R&D over business management, lacking systematic strategic planning and circular management thinking. This results in poor market adaptability, insufficient contract performance capabilities and lagging technological iteration, hindering sustainable development. Against this industry backdrop, optimizing the business management model, anchoring real market demand and building a scientific development logic have become key for third-party automotive R&D institutions to break through development bottlenecks.

1.2. Research Significance

Current domestic research on the automotive industry mainly focuses on technological R&D of complete vehicle manufacturers and optimization of industrial chains and supply chains[1]. Research on the business management of third-party R&D institutions is limited and lacks a systematic logical framework. From the demand-value perspective, this paper constructs an internal-external dual-cycle business management model[1, 3], defines four management levers and four technological development directions, enriches the theoretical research system of business management for third-party automotive R&D institutions and provides a new analytical perspective for industrial academic research.

Combined with practical enterprise operations, this paper clarifies the internal logic of top-level strategy, business control, project execution and market expansion, defines the key points of the internal lean management cycle and external innovative development cycle, and proposes optimization solutions tailored for third-party automotive R&D institutions. It can help enterprises clarify management responsibilities, optimize resource allocation, balance costs and benefits, enhance contract performance capabilities, technological iteration capabilities and market competitiveness, and provide replicable and implementable reference models for the business management practices of similar enterprises in the industry.

1.3. Research Methods and Content

This paper mainly adopts the literature research method and logical analysis method. By reviewing domestic and foreign literature on the automotive R&D industry, enterprise business management and circular development, it summarizes the current research status and theoretical foundation of the industry. Based on the demand-value perspective, it disassembles the core elements of enterprise business management, sorts out the collaborative logic among elements, constructs a dual-cycle development model and conducts in-depth exploration of business management practices.

ISSN: 2710-0723

This paper is divided into five parts. The first part is the introduction, elaborating the research background, significance, methods and content. The second part defines relevant concepts and analyzes the current development status of the third-party automotive R&D industry. The third part constructs a business management logical framework and analyzes the dual-cycle mechanism, core management elements and their internal correlations. The fourth part proposes targeted business management optimization strategies based on industry pain points. The fifth part summarizes the research conclusions and prospects the future development direction of the industry.

2. Definition of Relevant Concepts and Current Industry Development Status

2.1. Definition of Relevant Concepts

A third-party automotive R&D institution refers to a specialized technical service enterprise independent of complete vehicle manufacturers, engaged in professional services such as automotive complete vehicle design, component R&D, technical testing, scheme optimization and process improvement. Such institutions do not engage in complete vehicle production and sales, taking technical output and R&D services as their core businesses, providing customized R&D solutions for complete vehicle manufacturers and component suppliers, and serving as an important product of the specialized division of labor in the automotive industry.

The demand-value end is a business thinking model guided by market demand, customer demand and industrial policy demand, which regards demand as the fundamental basis for enterprise business development, technological R&D and strategic planning, and realizes commercial and technological value by exploring, matching and creating demand. This paper defines various demands as the "root system" of enterprise development, running through the entire process of enterprise business management.

The dual cycle constructed in this paper includes two modules: an internal cycle and an external cycle. The internal cycle is a lean management cycle focusing on internal project execution, cost control and contract performance. The external cycle is an innovative development cycle focusing on external market expansion, technological iteration and demand exploration. The two cycles empower each other and develop collaboratively.

2.2. Current Industry Development Status

Against the background of refined industrial division of labor, third-party automotive R&D institutions boast advantages of high professionalism, low R&D costs and high technological flexibility. For complete vehicle manufacturers, outsourcing R&D work can shorten the R&D cycle and reduce human and equipment investment. For R&D institutions, it enables them to focus on in-depth technological research and adapt to the R&D needs of various automakers, creating broad market development space[2]. Meanwhile, the state’s continuous policy support for new energy and intelligent vehicles provides policy dividends for technological innovation of R&D institutions[4].

Combined with industrial research and enterprise business practices, third-party automotive R&D institutions generally face management shortcomings at present. First, vague strategic planning: most enterprises lack top-level design, adopt blind business layouts and fail to align with real market demand. Second, inadequate control systems: loose cost budget control and non-standard project performance processes. Third, disconnect between market and technology: technological R&D deviates from market demand and business models lack replicability. Fourth, unclear organizational division: low collaboration efficiency between business and functional departments and an imperfect assessment system.

ISSN: 2710-0723

3. Construction of the Business Management Logical Framework for Third-Party Automotive R&D Institutions

3.1. Overall Design of the Logical Framework

From the perspective of the demand-value end, this paper builds a business management logical framework characterized by "rooted in demand, guided by strategy, supported by two wings, and empowered by dual cycles". It takes various industrial, customer and policy demands as the foundation of development; enterprise top-level strategic design as guidance; business (technology) and projects (functions) as the two wings of development; and relies on the internal lean management cycle and external innovative development cycle to achieve sustainable high-quality development of enterprises around the four major technological directions of intelligent connectivity, safety and reliability, user experience and energy conservation and low carbon.

3.2. Disassembly and Analysis of Core Management Elements

Combined with the logical framework, this paper divides the core elements of enterprise business management into four control modules: contract performance management, cost budget management, market strategy development and capability product iteration. The four elements have clear division of responsibilities and restrict each other. The detailed analysis of the elements is shown in Table 1.

Table 1. Analysis of Core Enterprise Business Management Elements

Core Management Element	Affiliated Sector	Cycle Type	Core Functions	Management Objectives
Contract (Performance) Management	Project (Function)	Internal Cycle	Project Execution, Performance Control, Process Supervision	Ensure Project Delivery, Control Execution Results
Cost (Budget) Management	Business (Technology)	Internal Cycle	Fund Control, Resource Allocation, Cost Accounting	Control Operating Costs, Ensure Enterprise Profitability
Market (Strategy) Development	Project (Function)	External Cycle	Market Research, Demand Exploration, Business Expansion	Broaden Market Channels, Accumulate Business Resources
Capability (Product) Iteration	Business (Technology)	External Cycle	Technology Upgrading, Product Optimization, Service Iteration	Enhance Technological Strength, Adapt to Market Demand

3.3. In-Depth Analysis of the Dual-Cycle Operation Mechanism

The internal cycle, centered on cost budget management and contract performance management, is the underlying guarantee for the sustainable operation of enterprises. Focusing on internal operational control, the internal cycle covers work such as project execution, resource control, business accounting and performance assessment. During the execution of R&D projects, enterprises adopt refined cost control to rationally allocate human, equipment and technical resources, formulate scientific budget plans and avoid fund waste and idle resources. Relying on contract performance management, they standardize project execution processes, clarify delivery standards and time nodes, and conduct process supervision and quality acceptance. Meanwhile, the internal cycle enables data review and indicator assessment,

ISSN: 2710-0723

providing feedback basis for external cycle business optimization. It reduces operational risks through lean management and lays a solid foundation for enterprise innovative development.

The external cycle, centered on market strategy development and capability product iteration, is the driving force for enterprise innovation and upgrading. Facing the external industrial market, the external cycle connects market paths and technological paths based on industrial policies, customer demands and market trends. On the one hand, it explores potential customer demands through market research, plans commercial cooperation models and broadens business channels. On the other hand, it iterates technological products based on market demand, optimizes R&D service capabilities and aligns with industrial technological trends such as intelligent connectivity and energy conservation and low carbon[5]. The iteration and optimization of new technologies and business models can feed back the internal cycle, improve the standardization of internal control and realize replicable business models and upgradable technical capabilities.

The internal and external cycles complement each other and are inseparable, forming a closed-loop collaborative development system. The lean control of the internal cycle provides a stable internal environment for the external cycle's market expansion and technological R&D, ensuring the high-quality implementation of R&D projects and reducing external business expansion risks. The external cycle's exploration of market demand and upgrading of technical capabilities provide data support for the internal cycle to optimize control standards and adjust cost budgets. Meanwhile, the four technological directions run through the entire dual-cycle process. Under the guidance of top-level strategy, business teams and functional teams perform their respective duties and collaborate, realizing resource sharing and complementary capabilities.

4. Optimization and Practical Strategies for Business Management of Third-Party Automotive R&D Institutions

4.1. Optimize Top-Level Strategic Design and Clarify Development Positioning

Third-party automotive R&D institutions need to formulate medium- and long-term development strategies based on industrial policies and market demand, clarifying their technological and market positioning. First, focus on advantageous technical fields and deeply cultivate segmented tracks such as intelligent cockpit, body R&D and low-carbon power to avoid homogeneous competition. Second, formulate technological R&D plans aligned with the four technological directions, balancing short-term business profitability and long-term technological upgrading. Finally, optimize the organizational structure, clarify the division of responsibilities between business groups and functional groups, and define job responsibilities and work processes to address the problem of chaotic departmental collaboration.

4.2. Strengthen Internal Cycle Control and Consolidate Operational Foundations

Establish a full-process cost control mechanism. Formulate budgets accurately in the early stage of projects by combining R&D difficulty, labor costs and equipment costs. Monitor fund usage in real time during project execution and strictly control unnecessary expenditures. Conduct cost reviews upon project completion, analyze the causes of fund losses and optimize subsequent budget standards. Meanwhile, link cost control with business capabilities to balance profitability while upgrading technology, achieving mutual restraint between capability development and cost control.

Build a standardized performance control system. Review cooperation terms and clarify rights and obligations before contract signing. Establish project ledgers during execution to record R&D progress, delivery nodes and quality inspection results. Conduct post-delivery reviews

ISSN: 2710-0723

and collect customer feedback. Meanwhile, incorporate performance assessment into employee performance evaluations, standardize work processes, ensure project delivery quality and enhance corporate reputation in the industry.

4.3. Empower External Cycle Innovation and Enhance Core Competitiveness

Conduct demand-oriented market research, keep track of automotive industrial policies and complete vehicle manufacturers' R&D needs in real time, segment customer groups and formulate targeted business cooperation plans. Expand business channels through industrial exhibitions and industrial cooperation platforms, and optimize business models by creating a combination of standardized R&D service packages and customized technical solutions to enhance business model replicability and expand market coverage.

Closely follow the four technological directions of intelligent connectivity, safety and reliability, user experience and energy conservation and low carbon, increase R&D investment, form professional technical R&D teams and keep pace with cutting-edge industrial technologies[5]. Establish a technological iteration mechanism to optimize R&D products and upgrade service capabilities based on customer feedback and market trends. Strengthen industrial cooperation, connect with universities, scientific research institutions and upstream component enterprises, integrate technical resources, break technical barriers and enhance core technological competitiveness.

4.4. Improve the Assessment System and Remove Barriers between Dual Cycles

Build a scientific personnel assessment and evaluation system to meet the needs of dual-cycle development. Clarify job responsibilities and objectives. For internal cycle positions, focus on assessing cost control, performance efficiency and process standardization. For external cycle positions, focus on assessing market expansion, technological innovation and demand exploration capabilities. Establish a data feedback mechanism to enable data exchange between internal and external cycles. Optimize personnel allocation and adjust business strategies based on assessment results to ensure the smooth operation of the dual cycles.

5. Conclusion and Prospect

From the demand-value perspective, this paper takes third-party automotive R&D institutions as the research object, disassembles core business management elements and constructs an internal-external dual-cycle business management logical framework, drawing the following conclusions: First, various market, policy and customer demands are the foundation for the development of third-party automotive R&D institutions, and all business development and technological R&D must anchor real demand. Second, business and projects are the two major levers for enterprise development, and the four elements of capability iteration, cost control, contract performance and market expansion restrict and develop collaboratively. Third, the lean management of the internal cycle is the foundation for sustainable enterprise operation, capable of controlling project quality and reducing operational risks, while the innovative development of the external cycle is the driving force for enterprise upgrading, capable of broadening markets and optimizing technology. Fourth, the collaborative operation of the dual cycles and clear organizational division are the key for enterprises to achieve high-quality innovative development. Addressing industrial pain points, enterprises need to optimize business models from three dimensions: strategic planning, cyclic control and assessment systems to adapt to industrial development trends.

In the future, the speed of technological iteration in the automotive industry will continue to accelerate, the industrial supervision system will be continuously improved, and third-party automotive R&D institutions will develop toward specialization, refinement and intelligence.

ISSN: 2710-0723

At the industrial level, industrial division of labor will become clearer and technical standards will be continuously unified, creating a favorable industrial environment for R&D institutions. At the enterprise level, the dual-cycle management model will become mainstream in the industry, with lean control and innovative development closely integrated. Enterprises will continuously optimize business models and upgrade core technologies. In the future, third-party automotive R&D institutions must adhere to demand orientation, remove barriers between internal and external cycles, strengthen technological innovation and operational control, and achieve long-term and high-quality development amid fierce market competition.

References

[1] Li Ming. Research on Optimization Paths for Business Management of Automotive R&D Enterprises[J]. Automotive Industry Research, 2022(05):45-49.

[2] Wang Haoyu. Current Development Status and Transformation and Upgrading Strategies of Third-Party Automotive Technical Service Institutions[J]. Industrial Innovation Research, 2023(12):78-80.

[3] Zhang Jing. Research on Construction and Optimization of Enterprise Dual-Cycle Management Model[J]. Modern Enterprise Management, 2021(08):36-40.

[4] National Development and Reform Commission. New Energy Vehicle Industry Development Plan (2021-2035)[Z]. 2020.

[5] Chen Yang. R&D and Commercial Development Paths of Intelligent Connected Vehicle Technology[M]. Beijing: China Machine Press, 2022.