Analysis of the Survival and Development Path of Traditional Enterprises Under the Perspective of Green Economy-A Case Study Based on Shell

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ABSTRACT

Under the wave of global low-carbon transformation, the survival space and development mode of traditional energy-intensive enterprises are facing double challenges. This article takes Shell Group as the research object and explores how fossil energy enterprises can balance short-term business safety and long-term strategic layout in the context of green economy. The study found that green policies put systematic pressure on traditional enterprises from the four dimensions of production cost, asset valuation, financing conditions and market demand. In order to cope with this situation, Shell has taken gradual measures such as strategic adjustment, business reorganisation, technological exploration and organisational change, but its core dilemma is that there is always a tension between the profit demand of the main oil and gas industry and the high investment in low-carbon new business. Based on this, this article builds an analytical framework of "external constraints - subject response - performance feedback", and proposes that traditional enterprises should rely on their own foundation, take the transformation path of "main business quality improvement, new industry expansion, organisational coordination", and gradually cultivate future-oriented green competitiveness under the premise of ensuring compliant operation.

Keywords: Green Economy; Green Transformation; Shell Group

1. INTRODUCTION

Global warming is evolving from an ecological issue to the core force of reshaping global economic rules. While the fossil fuel-driven industrialisation process has created unprecedented material prosperity, it has also led to serious environmental wear and tear. Extreme weather, glacier retreat and sharp decline in biodiversity have repeatedly warned of the unsustainability of the existing development paradigm. Against this background, the green economy, which balances efficiency and carrying, has gradually moved from academic conception to policy practice in various countries, and has become a global consensus [1].

The constraints and incentives of the green economy are transmitted to the enterprise level through multiple mechanisms. On the one hand, tools such as carbon tax, carbon emission trading system and carbon border adjustment mechanism form a hard constraint on high-emission activities from the cost side; on the other hand, the rise of the ESG (environmental, social and governance) concept in the capital market and the abundance of green financial products are changing the financing environment and valuation logic of enterprises. In particular, the implementation of the EU's carbon border adjustment mechanism has extended the requirements of green compliance from one country to the field of international trade, further compressing the market space of high-carbon products [2].

As the world's largest carbon emitter and developing economy, China's "dual carbon" goal marks a fundamental shift in the development model. Unlike developed countries, China's green transformation takes place at a stage when the industrialisation process is not over and the proportion of traditional industries is still high, which makes the task of transforming stock enterprises particularly difficult. High-energy-consuming industries such as steel, chemical industry, building materials and energy are not only the pillars of the national economy, but also at the centre of the pressure of transformation.

From the perspective of enterprise practice, the road to green transformation is full of dilemmas. If the pace of transformation is too fast, huge investment in the short term may devour profits and cause financial risks; if the transformation is slow, it may lead to penalties for violations, customer loss and financing difficulties. Small and medium-

sized enterprises often can only maintain the minimum compliance standards due to limited resources, while large enterprises, although strong, are constrained by the inertia of path dependence, sunk costs and large organisations. How to find a stable balance between survival and transformation is a topic that all traditional enterprises must face.

The existing literature has a rich accumulation of green economy and enterprise transformation, but most of them either focus on the industrial impact of macro policies, or only focus on the micro-motives of green innovation of enterprises, and lack an analytical perspective that systematically integrates external environmental pressure with the internal survival and development goals of enterprises. This article selects the typical case of Shell Group to reveal the real survival logic and development path of traditional energy enterprises in the context of the green era.

2. CORE CONCEPTS AND ANALYTICAL FRAMEWORK

2.1 Core Concepts

Green economy is the starting point of the analysis in this article. Although there are subtle differences in the definition of it in the academic community, the core is the same: this is a development model that pursues efficient utilisation of resources and environmentally friendly, and is committed to the coordination of economic, social and ecological goals [1] [3]. It is not a simple denial of traditional industrial civilisation, but an upgrade of the development paradigm, including both the growth of emerging green industries and the in-depth transformation of traditional industries.

Traditional enterprises specifically refer to those stock enterprises that rely on traditional production factors, are in the basic manufacturing or energy industry, have the characteristics of high energy consumption and high emissions, and follow the linear production mode. Compared with emerging green enterprises, they generally face problems such as stale equipment, technology lock and high transformation costs, and the difficulty and cycle of transformation are more prominent. Such enterprises constitute the cornerstone of the real economy and carry a large number of employment. The stability of their transformation is related to the overall stability of the social economy.

The survival and development of enterprises is the core performance dimension of this article. Survival is the bottom line, which is manifested in compliant operation, risk controllability and financial security. Inability to meet environmental protection requirements will directly threaten the legitimacy of the enterprise's operation. Development is a higher-level goal, including technological progress, efficiency improvement and value creation. In the green context, development is no longer equivalent to scale expansion, but the restructuring of business model and competitiveness through green innovation [4]. Survival and development are interdependent: survival is the foundation of development, and development is the sublimation of survival. The performance changes at the survival and development level of the main response behavior of the enterprise, and the performance results will reverse the enterprise's perception of external constraints and drive the next round of strategic adjustment. If the transformation performance is good, manifested in financial sustainability, significant emission reduction results, and improved ESG valuation, the enterprise will increase low-carbon business investment and accelerate organizational change; if the performance is not as expected, such as serious losses in low-carbon business, pressure on main business profits, and tight cash flow due to transformation investment, the enterprise will converge and transform. Rhythm, return to the main business to improve quality and efficiency, and carefully control the scale of the new business layout. Performance feedback is not a one-way result output, but an intermediary link between the actual performance of the enterprise and the subsequent strategic iteration, so that "external constraints - subject response - performance feedback" constitute a closed-loop dynamic analysis framework, rather than a static linear relationship.

2.2 Further Analytical Framework

The three form a clear logical chain. As an external environment, the green economy transmits constraints and opportunity signals to traditional enterprises through policy regulations, market incentives, technological changes and changes in consumption preferences. Environmental regulations and carbon pricing on the policy side directly increase the operating costs of enterprises; green finance and ESG investment on the market side have changed the financing conditions of enterprises; low-carbon innovation on the technology side not only brings alternative threats but also provides transformation tools; green preferences on the consumer side affect the market space and premium ability of products [5].

In the face of these changes, traditional enterprises, as the main body of transformation, must make a systematic response at the strategic, technical, operational and organisational levels. The speed and effectiveness of its response are affected by internal factors such as resource endowment and management cognition, and are ultimately reflected in the survival

status and development level of the enterprise. This forms a complete analysis closed loop of "external constraints - subject response - performance feedback".

3. REVIEW OF CURRENT RESEARCH STATUS AT HOME AND ABROAD

The theory of green economy has undergone a long evolution. The early research explores the relationship between economic growth and environmental protection from ecological economics. The work of Barbier and others has laid the theoretical foundation in this field, not only to prove the feasibility of the green economy, but also to draw the differentiated transformation path of developed countries and developing economies [1,3].

As theory moves to practice, the focus of research shifts to the effect evaluation of specific policy tools. Western scholars have carried out a lot of empirical work on clean energy, circular economy and carbon market. The review found that environmental performance and economic performance are not necessarily in conflict, and reasonable design policies can achieve a win-win situation [6]. At the same time, the evolution model constructed points out that the cost of transformation and climate risks significantly affect the willingness of enterprises to adopt green technology [2]. These achievements have deepened the understanding of the micro-mechanism of transformation, but the research subjects are mostly high-tech industries in developed countries, and the attention to traditional industries in developing countries is relatively limited.

Domestic research is booming with the promotion of the "dual carbon" strategy. Scholars have systematically analysed China's green policy system, carbon market construction and green financial development. Lu et al. found that green credit policies can force the transformation of high-pollution enterprises through financing constraints, but there are significant differences in the responses of different enterprises [7]. There are also studies that verify the incentive effect of the carbon trading mechanism on green innovation, supporting the applicability of the "Potter hypothesis" in the context of China. In general, domestic research is relatively sufficient in macro-policy analysis, but the research on the micro-level of enterprises and taking into account the survival guarantee still needs to be strengthened.

The literature on the transformation of traditional enterprises generally recognises the inherent contradiction between their high-carbon attributes and the green economy, and analyses themes such as transformation technology, cost and subsidies. Research shows that green transformation requires a large amount of upfront investment, which will increase costs in the short term, but can be rewarded through efficiency improvement in the long run [4]. Yu Xulan and others pointed out that although the pressure of green credit promotes the emission reduction and development of enterprises, the process is accompanied by significant operating risks. The relationship between ESG performance and financial performance is regulated by the institutional environment and is not linearly correlated (DasGupta and Roy) [8].

There are still shortcomings in the existing research: first, it focusses on long-term upgrading and does not pay enough attention to the short-term survival in the process of enterprise transformation; second, the evaluation dimension is single, focussing more on the effect of emission reduction, and lacks the integrated evaluation of financial health, risk and growth potential [8]; third, for different industries in China, The research on the differentiated transformation of enterprises of different sizes is not sufficient [9].

In the field of strategic management, the survival and development of enterprises are often discussed separately. Survival research focusses on risk control and crisis early warning, and development research focusses on technological innovation and strategic upgrading [10]. This dichotomy is acceptable in a stable environment, but its limitations are highlighted in the period of dramatic changes such as green transformation. Although some studies have begun to pay attention to the impact of carbon risk awareness on transformation [4], they rarely put survival and development under a unified framework for coupling analysis, and it is difficult to systematically answer the core question of how traditional enterprises can "stabilise the present and win the future".

4. RESEARCH DESIGN AND CASE SELECTION

4.1 Research Method

This article adopts a single case study method and selects Shell Group as the target. This method is suitable for answering questions such as "how" and "why", and can deeply analyse the mechanism behind complex phenomena. For the multi-dimensional interactive topic of green transformation, case studies can provide rich situational details to help understand the dynamic process.

4.2 Case Selection Criteria

Shell is mainly selected based on three considerations: typicality - as one of the world's largest international oil companies, its business covers the entire industrial chain and is a typical representative of fossil energy enterprises; observability - as a listed company, its strategy and financial data are open and transparent, which is convenient for tracking and analysis; systematicity - Shell is in the industry One of the first companies to put forward the goal of carbon neutrality, its transformation involves multiple levels of strategy, business, technology and organisation, and the context is clear.

It should be admitted that the conclusion of a single case study has its limitations in terms of universality, and the path of enterprises in different industries or institutional environments may vary. The conclusion of this article is mainly applicable to large-scale transnational fossil energy enterprises. References to other types of enterprises need to be combined with specific situations. However, as an exploratory study, its analytical framework can provide a basis for subsequent large-scale empirical research.

4.3 Data Sources

The data source is public second-hand information, including Shell's annual report, sustainable development report, energy transformation document, official website announcement, authoritative financial report, industry analysis and academic literature. Multi-channel data is conducive to triangular verification and improves the confidence and effectiveness of research.

In terms of data analysis, this article adopts the content analysis method to systematically sort out and code the collected data. First of all, the coding category is pre-set based on the theoretical framework. The first-level coding includes the three dimensions of external environmental impact, enterprise strategy response, and transformation performance performance; then the second-level code is disassembled: external environmental impact includes cost pressure, asset stranding risk, financing constraints, and market demand changes; enterprise strategic response includes strategy Target iteration, business restructuring and adjustment, technology research and development layout, organizational culture innovation; transformation performance is divided into survival performance (compliance status, financial cash flow, business risk) and development performance (carbon emission intensity, low-carbon business scale, ESG market evaluation). The original data text fragments of Shell's annual report, sustainable development report, news announcements, media reports, etc. are mapped to the corresponding code nodes one by one: for example, the announcement of oil and gas assets disposal in the annual report is mapped to the "business restructuring and adjustment" code; the disclosure content of rising carbon price increases is mapped to "cost pressure" Code; the installed data of renewable energy is mapped to the "low-carbon business scale" code; the profit and cash flow statement data are mapped to the "survival performance" code. After completing the data coding and collection, carry out interpretation and analysis in combination with the closed-loop framework of "external constraints-subject response-performance feedback", identify the evidence of performance changes driving strategic adjustment, explore the causal mechanism behind the transformation behavior, and conduct a structured analysis of Shell's transformation practice.

5. PRACTICAL AND CHALLENGES OF SHELL'S GREEN TRANSFORMATION

Shell's transformation process is rooted in the macro background of deepening global climate governance. Entering the second decade of the 21st century, the signing of the Paris Agreement marks a new level of political and social attention to climate change. Shell's business environment has changed dramatically: countries' carbon emission reduction targets have been tightened, and the scope of carbon pricing has expanded; investors are wary of the risk of stranding fossil energy assets; the cost of renewable energy has plummeted, posing a substantial alternative threat to traditional oil and gas business; and the pressure on public opinion and environmental protection organisations is also increasing day by day.

The specific impact is reflected in many aspects. On the cost side, the rise in carbon prices in the EU has directly pushed up the cost of Shell's oil refining and chemical business in Europe. On the asset side, strict emission reduction targets may cause some oil and gas reserves to be unable to be economically exploited, resulting in the risk of asset impairment. On the financing side, capital flows to the green industry, and the financing of traditional projects becomes more difficult. On the market side, the transformation of energy consumption structure has gloomed the long-term prospects of oil demand. These shocks are intertwined, forcing Shell to re-examine its strategic direction.

Shell's strategic adjustment is gradual. In the mid-2010s, the company began to openly discuss the energy transformation, but at that time, the low-carbon business was only regarded as a supplement. After 2016, the adjustment accelerated significantly: in 2017, the concept of "net carbon footprint" was proposed and the intensity target was set; in 2020, the net

zero emission target of 2050 was announced, marking the shift from passive response to active layout; in 2021, a detailed transformation strategy was released, clarifying the specific plan of each business sector.

The adjustment of the business structure is the core. In the traditional oil and gas field, Shell adopts the strategy of "improve quality and efficiency", no longer pursuing production expansion, but focussing on low-cost and high-return high-quality assets, and divesting some high-cost and high-emission projects. In terms of oil refining business, the old production capacity is closed or sold, and the energy efficiency is upgraded. This move aims to maintain the profitability and cash flow of traditional business and provide financial support for the overall transformation.

In the low-carbon field, Shell has a multi-point layout: investing in wind energy and solar power generation, aiming to become a major electricity supplier; betting on hydrogen energy (including green hydrogen and blue hydrogen), aiming at industrial and transportation fields that are difficult to decarbonise; developing carbon capture, utilisation and sequestration (CCUS) technology; using its huge gas station network to expand electricity New businesses such as car charging and biofuel sales.

At the organisational and cultural level, Shell has carried out multiple rounds of structural adjustments, breaking the traditional upstream and downstream division, establishing an independent low-carbon business sector to concentrate resources and attention, and implementing differentiated performance appraisal. At the same time, through internal training and indicator guidance, carbon emission performance will be included in the management assessment to strengthen the low-carbon awareness of the whole staff.

These efforts have achieved certain results: the intensity of carbon emissions has decreased, energy efficiency has been improved, the installed capacity of renewable energy has increased, the hydrogen energy and CCUS projects have been steadily promoted, and the ESG rating has also been recognised by some investors.

However, the road to transformation is far from smooth. The core contradiction lies in the tension between traditional oil and gas profits and low-carbon investment. The low-carbon business is still in its early stage, and the business model is immature. It requires continuous large investment and it is difficult to contribute profits in the short term. At the same time, the oil and gas business is still the main pillar of the company's profits and cash flow. Under the pressure of shareholders to pursue short-term returns, Shell has to make a difficult choice between the two. For example, in the energy crisis caused by the Russia-Ukraine conflict in 2022, oil and gas prices soared, Shell's traditional business profits reached a record, and the company immediately increased its investment in oil and gas, which raised questions about its transformation determination and highlighted the complexity and repetitiveness of the transformation.

In addition, the uncertainty of technology and market constitutes another dilemma. The prospects of hydrogen energy, biofuels, CCUS and other technical routes are uncertain, and the commercialisation schedule is difficult to predict. Shell's "bet" on the multi-technology path has the risk of misjudgement. At the same time, the market acceptance, policy support and competition pattern of low-carbon products are also constantly changing.

Organisational inertia is also a major constraint. The oil and gas business capabilities accumulated for more than 100 years cannot be directly replicated in new fields such as renewable energy and electricity sales. Different businesses require different technologies, business models and competitive logics. Although Shell can acquire some capabilities through acquisition, it still takes a long process to reinvert the internal system and change the culture.

In general, Shell's transformation is a long-term process full of contradictions and trade-offs. The strategic direction has been clear, and the organisational action has been launched, but the depth and speed of the transformation are constrained by multiple factors. The core proposition has always been how to balance the allocation of resources between the traditional main business and the emerging business. Its experience shows that the green transformation of traditional enterprises is by no means an overnight strategic turning point, but a dynamic adjustment and complex process full of repetition.

6. PATHWAY FOR THE GREEN TRANSFORMATION OF TRADITIONAL ENTERPRISES

From Shell's practice, the transformation ideas that have reference value for similar traditional enterprises can be distilled.

6.1 Sticking To Main Business

Sticking to the main business and stabilising the foundation is the prerequisite for transformation. Transformation cannot be at the expense of existing business. Shell's experience shows that the oil and gas business will continue to be a source of funds and profits for a long time to come, and a "blood-making machine" to support new business investment. The

premature or hasty divestment of the main business will make the enterprise lose the economic foundation for transformation. Therefore, the initial strategy should be to green the existing business, reduce carbon emissions through energy efficiency improvement, process improvement and fine management, and win time and funds for transformation under the premise of ensuring compliance and profitability.

6.2 Cultivating Increments And Expand New Roads

Cultivating increments and expanding new roads is the key to transformation. It is not enough to optimise the stock alone. Enterprises must focus on the future and actively incubate new green growth engines. Shell's investment in renewable energy, hydrogen energy and CCUS is precisely for long-term development. When choosing a new direction, traditional enterprises should make full use of their own endowment and give priority to developing areas that have synergy with their main business. For example, energy enterprises can rely on their experience in gas treatment and reservoir management to enter hydrogen energy and CCUS, and chemical enterprises can rely on existing sales networks to develop bio-based materials. This kind of "capacity extension" transformation has a higher success rate, which is also conducive to the smooth connection of new and old businesses.

6.3 Organisational Coordination And Adaptation Strategy

Organisational coordination and adaptation strategy are the guarantee of transformation. Green transformation is not only a change in technology and business, but also a change in organisation and culture. Shell's structural adjustment shows that enterprises need to reshape the organisational structure, assessment mechanism and talent system according to the new strategy. This includes the establishment of independent green business units, integrating carbon emission indicators into KPIs, strengthening green skills training for employees, and creating a corporate culture that encourages innovation. Only when the organisational capacity matches the strategic direction can the transformation measures be effectively implemented.

Risk control and steady progress should run through the whole process of transformation. In the face of the high degree of uncertainty in technology, market and policies, enterprises must avoid blind ventures. Shell's progressive and diversified investment strategy is a pragmatic response to uncertainty. Enterprises should establish a rigourous investment assessment and risk control mechanism, reasonably control the pace of transformation and the scale of investment, and maintain strategic flexibility for flexible adjustment. For small and medium-sized enterprises, the risk tolerance is weak, and they should start from the link with the clearest investment return and fight steadily.

It is equally important to make good use of policies and develop with strength. Green transformation cannot be separated from external support. Shell's process is deeply influenced by the policy environment such as EU carbon market rules, renewable energy subsidies and hydrogen energy strategies. Enterprises should take the initiative to follow up and participate in policy discussions, and make good use of various supporting tools to reduce the cost of transformation. The government needs to improve carbon pricing, strengthen green finance, build a common technology platform, and create a favourable institutional environment for the transformation of enterprises.

Finally, the transformation path must be adapted to the enterprise. Large enterprises have abundant resources and can carry out forward-looking layout and exploration; small and medium-sized enterprises need to focus on their own pain points and advantages and adopt a strategy of running quickly. Industry attributes also determine the pace of transformation. Heavy asset industries such as energy and chemical industry have a long cycle and large investment, requiring stronger strategic determination; light industry, manufacturing and other industries are relatively flexible. Enterprises must start from reality and find the most suitable transformation path for themselves, rather than blindly imitating.

7. CONCLUSION AND PROSPECT

This article analyses the logic of survival and development of traditional enterprises under the background of green economy through the case of Shell. Research shows that the green economy has a systematic impact on traditional enterprises through multiple channels such as policy, market, technology and consumption, which not only brings cost and asset pressure, but also contains opportunities for innovation and upgrading. To this end, enterprises need to carry out coordinated changes at the strategic, business, technical and organisational levels.

Shell's practice reveals the possible path of "main business stability, new business expansion, and organisational adaptation", which helps enterprises achieve a balance between short-term stability and long-term growth. However, the process is full of contradictions. The competition for resources between the main industry and the new industry, the

uncertainty of technology and the market, and the obstacles of organisational inertia, etc., all restrict the transformation effect. This proves that green transformation is not a one-time strategic decision, but a marathon that needs continuous adjustment.

The theoretical contribution of this article lies in the construction of a unified analysis framework of "external constraints-subject response-performance feedback", which makes up for the shortcomings of the separation of macro and micro, survival and development in existing research. At the practical level, the refined path principles can provide reference for traditional enterprises to formulate transformation strategies.

This study also has limitations. The conclusion of a single case is limited in extrapolation. In the future, the influencing factors and effects of transformation can be more systematically tested through multi-case comparison or large sample empirical analysis. With the deepening of transformation practice, new phenomena and problems will continue to emerge, and it is necessary to continue to follow up and study.

Green economy is the historical trend, and the transformation of traditional enterprises is a key part of it. Although the road ahead is difficult, enterprises that face challenges and take the initiative to change are fully capable of reinventing themselves in the green wave. This is not only about the survival and prosperity of individual enterprises, but also about the sustainable future of the whole society and economy.

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