



# Insights from Foreign Corporate Business Development Patterns and Management Practices for Power Grid Enterprises

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**Abstract.** Presently, power grid enterprises are confronted with significant challenges pertaining to business development. There is a pressing necessity to expedite the transformation and enhancement of competitive businesses, with the objective of providing support to power grid enterprises in the cultivation of new sources of profit. This paper selects foreign advanced enterprises, including Tokyo Electric Power, Electricite De France, GE, and ABB, and analyses the typical practices of these enterprises in the layout, management, and control optimisation of competitive businesses. It also extracts and summarises useful references for power grid enterprises.

**Keywords:** business layout; competitive business; management model; transformation and upgrading

## 1 Introduction

During the "14th Five-Year Plan" period, China's economic development will still face challenges for a long time, the space for electricity prices will narrow, the growth of electricity will slow down, and the growth of power grid business relying on "volume and price" will be limited.

Power grid enterprises need to coordinate the development and utilization of the company's technology, equipment, capital, platform, talent and other high-quality industrial elements, promote the quality and efficiency of the power grid's leading business, improve the level of lean equipment management, and strengthen the security of the power grid.

Power grid enterprises should give full play to the R&D and manufacturing capabilities of industrial units such as equipment and components, open up the innovation chain, and provide key support for expanding the channels for the transformation of scientific and technological achievements and enhancing the application value of scientific and technological products[1].

Power grid enterprises need to integrate the advantages of industrial technical talents and the territorial advantages of provincial companies, quickly develop new energy-

using services for typical scenarios, and enhance the service capabilities of enterprise users and the upstream and downstream of the industrial chain.

This paper summarizes and sorts out the typical practical experience of foreign countries, puts forward the development direction, development path and strategy of competitive business in the industrial sector of power grid enterprises, as well as the corresponding management and control optimization ideas and strategies, and studies the development pattern and management and control mode of competitive business in the industry that meet the regulatory requirements and the actual situation of power grid enterprises.

With the profound adjustment of China's energy supply and demand relationship, the bargaining power of users in energy sales and energy consumption links has been improved, how to provide energy and power products and services faster, more conveniently, safer and more intelligently according to the personalized needs of users is an important starting point for power grid enterprises to improve market response and develop new businesses in the future. The transformation of social energy demand requires power grid enterprises to develop energy Internet industry clusters in a coordinated manner based on the core energy needs of key users in typical scenarios, so as to liberalize and invigorate the system and mechanism to stimulate the innovation vitality of grassroots business formats.

First, the company is required to work with partners to develop new energy-using scenarios, drive the company to work closely with ecological partners to create emerging energy-using scenarios such as smart transportation, smart homes, smart parks, smart factories, and smart villages, and jointly carry out resource sharing, product innovation, and market development.

Second, the company is required to deeply tap the value-added potential of power big data and energy big data based on infrastructure such as provincial energy big data centers, and develop typical businesses and star products with great reuse potential, multiple application fields and sustainable business models in emerging digital industries.

## 2 Tokyo Electric Power Company

Tokyo Electric Power Company (TEPCO) is Japan's largest power company. It is constrained by a significant decline in power demand, continued increases in power generation costs, and strict regulation of power transmission and distribution prices. In response, TEPCO has proposed a strategy of transforming into an all-around public utility enterprise. This will entail driving digital transformation with emerging technologies, transforming from a product-based economic model to an application-based economic model, and improving its business development capabilities.

### 2.1 Layout Adjustment

The initial step is to facilitate the sharing of resources associated with the power grid infrastructure, thereby enabling their optimal utilisation. TEPCO primarily establishes

wholly-owned or majority-owned subsidiaries for the purpose of conducting specialized operations and realizing the value of power grid infrastructure, including power communication network facilities, line poles, underground pipe gallery space resources, engineering construction, geographical data information, and other pertinent assets.

The second objective is to develop and implement the Internet of Things. TEPCO is concentrating its efforts on the implementation of IoT technology in the areas of power generation and the provision of products and services to users, with the objective of achieving improvements in efficiency, reductions in costs and the stimulation of innovative developments. Among these, the power generation sector has already achieved system design and commercial application of IoT technology, while extensive exploration and practice are being carried out in the user sector [2-3].

Thirdly, the construction of a business ecosystem is required. It is recommended that a cross-border business alliance be established with TEPCO as its core, with the objective of achieving the sharing of the widest range of customer resources and business channels. The implementation of joint marketing packages and the establishment of joint ventures can facilitate the development of low-cost markets and the occupation of these markets. TEPCO has announced the commencement of joint projects with other companies on a monthly basis. In the process of developing new businesses, such as residential energy-saving consulting and smart home design and renovation, TEPCO EP has launched product portfolio services in collaboration with cross-industry companies, including EPCO, SONY, and Mitsui Sumitomo Insurance. This has resulted in the rapid establishment of a market advantage in the fields of residential energy conservation and smart homes. In return for a temporary increase in market share in the electricity sales sector, the company has secured the long-term expansion of its business operations and potential commercial space.

## **2.2 Institutional Reform**

The initial approach is to grant complete authority. TEPCO has designated its transformation as a holding group company, thereby fully delegating operational decision-making authority to its three primary subsidiaries. Concurrently, the group headquarters is intensifying its oversight of strategic, cost, and operational performance. The 'MIRAI Management Committee' was constituted with the objective of focusing on major operational strategies at the group level. These include the development of new business areas and the restructuring of sector businesses, with the intention of enhancing the efficiency and quality of decision-making. The Production Multiplication Committee was constituted with the objective of evaluating the annual cost reductions of the group company and its three major subsidiaries, with a view to enhancing cost sensitivity. The power generation, power grid and energy retail businesses have been developed as standalone entities, operating with complete autonomy. The three major subsidiaries have significantly expanded their business income, with the majority of profitable businesses establishing professional companies. This demonstrates a clear intention to pursue a strategy of maximum independence in capital, control and participation.

The second objective is to pursue continuous improvements to the organisational structure. In alignment with the objective of "providing customers with superior services," the competitive energy retail business has undergone a restructuring process, with the establishment of business divisions based on business scenarios to facilitate professional and intensive development. In 2016, TEPCO undertook a restructuring of its group companies, merging the customer service company with the headquarters' electricity sales department to form TEPCO Energy Partner Co., Ltd. (Hereinafter referred to as EP Company), with the objective of improving operational efficiency and enhancing the user experience.

The third objective is to optimise the functional positioning of the headquarters. TEPCO is pursuing a transformation into an integrated energy service provider. On the basis of reinforcing traditional energy services, the company is planning ahead and establishing a comprehensive foundation, with the objective of becoming a market leader and a pioneer in technology, and exemplifying an internationally advanced integrated energy service enterprise. In 2012, TEPCO initiated a strategic transformation into an integrated energy service provider. In the initial phase of its strategic transformation, TEPCO joined forces with other energy companies in Japan to provide integrated energy services, primarily offering a comprehensive range of solutions encompassing electricity, gas, and other energy sources. Following the full liberalisation of the Japanese retail electricity market in 2016, TEPCO seized the opportunity to restructure its business, establish its strategic position as an integrated energy service provider and set up new specialised companies to provide a variety of electricity and energy products and new energy services. This strategy was designed to position TEPCO as a leader in the integrated energy service industry.

### 3 Electricite De France

Electricite de France (EDF), founded in April 1946, is a state-owned multinational energy company. It is also the largest energy company in Europe and the world's largest nuclear power operator. Its business scope covers all aspects of the upstream and downstream power industries, as well as the fields of natural gas and energy trading and services. In recent years, EDF has gradually developed into the largest power group in Europe through the expansion of its international business and management model.

#### Expanding international business

The initial objective is to concentrate on industrial development that fulfils the comprehensive requirements of technology, the economy and the environment. The allocation of global resources is a key focus for EDF, as it represents a significant driver of the company's development. In order to reduce the overall costs of procurement, equipment is purchased from regions with lower costs, such as Southeast Asia and China. Concurrently, nuclear power projects are being advanced in Europe through the utilisation of nuclear power technology accumulated in France. New technologies are being promoted in emerging markets, and they are being promoted after being monitored and

enhanced. This has led to the formation of the AE (overall engineer) model of continuous technological improvement, which seeks to integrate technology, the economy and the environment.

Secondly, efforts are being made to enhance the efficiency of energy services provided to customers, thereby establishing a positive corporate image and strengthening customer loyalty. EDF maintains constructive and collaborative relationships with all relevant governmental and non-governmental stakeholders engaged in matters pertaining to energy, technology, economics and environmental protection. The company maintains integrated operations of generation, transmission and distribution in order to provide users with a reliable power supply. It has become a leader in the field of nuclear power safety, promoting the advantages of nuclear power to Europe and the wider world. It is also expanding the ways in which electricity is used and the scope of its use, including demand-side management, smart grids, electric vehicles and other aspects that are beneficial to sustainable urban development. Furthermore, it is developing international markets and growing the EDF Group. It is innovating across the entire value chain of generation, transmission, distribution, markets, services and trading in order to adapt to the future development of electricity.

#### Innovative Management Model

EDF employs a differentiated approach to the management and control of its diverse business portfolio. The group headquarters has established business departments, including those responsible for electricity and engineering, power supply and sales, etc. These departments are directly involved in the management of key businesses, such as nuclear power, while not participating in the management of other businesses.

In regard to its international business, EDF has adopted the model of an independent platform subsidiary. The group has established Electricite de France International, which holds wholly-owned, controlling and participating shares in companies in relevant countries around the globe. Additionally, it has retained an international department at the group headquarters. The department plays a pivotal role in facilitating the coordination of domestic business and related departments in support of international business operations.

## 4 ABB Company

The race to develop new industrial manufacturing models has already begun, with industry players such as Siemens, SAP, Bosch and General Electric vying for position. As the second-largest electrical manufacturing company in the world, ABB must capitalise on the transformational opportunities presented by the fourth industrial revolution. It must proactively pursue industrial transformation and adaptation, and prevent competitors from establishing a competitive advantage in emerging fields.

### 4.1 Business Layout Adjustment

The initial focus is on businesses that are highly digitalised, with the objective of enhancing the profitability of the digital industry. The business structure is undergoing a

gradual transition from a primary emphasis on power grids and infrastructure businesses, with industrial businesses serving as a supplementary component, to a configuration in which industrial businesses assume a primary role, with power grids and infrastructure businesses serving as a supplementary component.

Secondly, the company is engaged in active collaboration with manufacturers of cutting-edge digital platform technologies, with the objective of offering customers a comprehensive digital product portfolio. During the transformation period, ABB launched the ABB Ability digital solution, which encompasses factory automation and robotics, process industry automation, and electrification solutions for smart buildings.

Thirdly, a comprehensive ecosystem is established to support the ABB Ability digital solution, facilitating the development of distinctive software solutions encompassing the full spectrum of needs, from product lifecycle management to asset health solutions. This enhances the competitiveness, flexibility, and efficiency of product lifecycles, manufacturing, and operations.

## 4.2 Institutional Mechanism Innovation

Prior to the implementation of the transformation strategy, the management model for business areas adopted by various business units of ABB was a matrix structure. This entailed the appointment of a dedicated regional manager for each region, with the regional management also assuming responsibility for the business in that region. However, in light of the accelerated pace of change in the global industrial landscape, shortcomings in the matrix management system became increasingly evident. These included the fixed tenure of members, a transient concept, and a paucity of accountability; personnel subjected to dual leadership, and the difficulty in delineating responsibilities; conflicts of interest between regional and business managers in the matrix; conflicts between decentralised and centralised management; the allocation of resources between departments, and impediments to technology sharing.

ABB has undergone a transformation of its original matrix management system, abolishing the original country and regional structure and adopting a model in which the four major business units directly serve customers in each region. This has resulted in a more straightforward management structure, the elimination of numerous international regional management entities, a reduction in management costs, and an enhancement in the efficacy with which the strategies of each business unit are operationalised.

## 5 General Electric Company

GE is the world's largest electrical and electronic equipment manufacturing company, committed to continuous innovation, invention and reinvention, and has been ranked as the top of the Fortune 500 by Fortune Magazine for many consecutive years.

## 5.1 Clearly Define the Functional Positioning of Units at All Levels

GE has reintegrated the original business divisions into strategic business units, and further integrated them into more business-focused business groups. GE headquarters serves as an investment center, uniformly formulating the strategic objectives of the business groups, deciding on the direction of investment, and approving and controlling the financial and operating conditions of the business groups. The GE business groups are positioned as profit centers, focusing on the core business as well as enhancing the specialized management capability and market profitability of the business. The GE Business Group is positioned as a profit center. Enterprises under the business group are cost centers, mainly through the application of automation, digital industrial technology to enhance production capacity and product quality[4].

## 5.2 Improvement of Corporate Governance Structure

The shareholders' meeting, the board of directors and the top management team together constitute GE's corporate governance structure, which is sound and forms a corporate governance structure with effective checks and balances.

**Shareholders and General Meeting of Shareholders.** GE's shareholding is relatively decentralized, with most of the shares held by institutional investors such as banks, pension funds and mutual funds, and individual shareholders also occupy a considerable proportion. The General Meeting of Shareholders decides on the Articles of Association, discloses and exchanges information, and participates in the final appointment of members of the Board of Directors.

**Board of Directors.** The Board of Directors consists of 16 people. Of these, 13 are outsiders, including 10 entrepreneurs, two academic experts, and one former politician, and three are insiders, including one chairman and chief executive officer and two vice-chairmen. The Board of Directors elects the Chairman and determines the Chief Executive Officer. There are seven specialized committees, including the Audit Committee, the Finance Committee, the Management Development and Treatment Committee, the Selection Committee, the Business Operations Committee, the Public Accountability Committee, and the Technology and Science Committee.

**Top Management Team.** GE's top management team is responsible for operational decisions, including setting the vision, formulating the corporate development strategy, and carrying out corporate management operations. The Board of Directors evaluates the senior management team on the basis of corporate growth, corporate development strategy, improvement of operating performance, profitability and efficiency of capital use, and organizational effectiveness[5].

# 6 Conclusion

(1) Expanding emerging businesses according to their own advantageous resources and strategic requirements.

Advanced foreign enterprises focus on the current situation of enterprise management and strategic positioning, highlighting the scope of their own main business, with

the main business as the core, the appropriate extension of the formation of a diversified development pattern, while focusing on the characteristics of the core business, the layout of the relevant business, in order to form a mutually complementary business development pattern. For example, EDF, relying on its own advantageous resources, vigorously implements the strategy of “going out” and actively explores the international market and international business, which strongly supports and leads the healthy development of the company's main business.

(2) Selection of control mode according to its own business development characteristics.

Advanced foreign enterprises focus on selecting the group's control mode according to the current situation of enterprise management and business characteristics, and on this basis, they implement professional management by clearly optimizing the functions of the headquarters, implementing business integration, and promoting integrated management. For example, EDF and GE focus on differentiated control modes based on the company's business management characteristics to enhance the market competitiveness of subsidiaries.

(3) Clearly define the functional positioning of the headquarters, optimize the functions of the headquarters, and realize the efficient operation of the headquarters.

Advanced foreign enterprises have optimized the management functions of the headquarters, optimized and adjusted the relevant management functions based on the principles of streamlining, efficiency and better promotion of strategy implementation, reducing the intersection of responsibilities, breaking departmental barriers, and promoting synergy of work. More attention has been paid to giving full play to the leading role of the headquarters in capital operation, strategic planning, resource allocation and other aspects. For example, Tokyo Electric Power, GE and other enterprises have focused on the company's strategic objectives, optimized the functional positioning of the headquarters, adjusted the relationship of authority and responsibility between the group headquarters and business divisions (operating units), and reshaped and optimized the functions of the group headquarters.

(4) Implementing control based on a sound governance structure.

Advanced foreign enterprises focus on improving the governance structure of the board of directors of the headquarters and subsidiaries, strengthening the capital ties between the headquarters and subsidiaries, and improving the control system of the headquarters and subsidiaries. For example, GE exercises shareholders' rights by assigning full-time directors, and realizes effective control over some subsidiaries by enhancing the professional ability of equity directors and clearly defining the responsibilities and authorities of the boards of directors of the parent and subsidiaries without directly interfering in the daily operation of the enterprises.

(5) Strengthen innovation-driven and build sustainable competitive advantage.

Foreign advanced enterprises generally attach importance to the core position of innovation in the development of enterprises, continuously increase R&D investment, and promote technological innovation, management innovation and business model innovation. Enterprises should establish a market-oriented and customer-centric innovation system, encourage cross-border cooperation and open innovation, and quickly respond to market changes and consumer needs. At the same time, enterprises should pay

attention to the protection and utilization of intellectual property rights, and build technical barriers through patent layout and standard formulation, so as to form a competitive advantage that is difficult to imitate.

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