

Study on Strategy and Planning Environment Analysis Model and Evaluation System of Power Grid Enterprises Based on Industry Ecosystem

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Keywords: Strategy and planning environment, Industry ecosystem, Analysis Model, evaluation system.

Abstract. Based on the industry ecosystem theory, this paper constructs the strategy and planning environment analysis framework and evaluation system of power grid enterprises from the three aspects: macro environment, industry environment and core ecological environment. And it carries out empirical analysis taking A grid enterprises as the research object. The results show that the overall environment of A enterprise strategy and planning environment is good. Specifically, political and legal environment and economic environment have a favorable impact on enterprise development, but the power reform environment and competitor environment have certain adverse effects on the realization of corporate strategy and planning objectives. This paper provides theoretical and methodological support for strategy and planning environmental assessment of grid enterprises, which could promote the scientificity and systematicness.

1. Introduction

With the integration of the energy revolution and industrial revolution, the influence of external environment on power grid enterprises has become increasingly prominent. As the economy enters the stage of high-quality development, the new round of power reform accelerates, the external environment faced by China's power grid enterprises is increasingly complex. Enterprise development becomes more and more uncertain, which gives more challenge to the formulation and implementation of corporate strategies. So it has great significance to understand the external environmental changes correctly and grasp environmental trends accurately.

The analysis on strategy and planning environment has always been the focus of academic circles. Michael E Porter (1979) proposed five-force model of corporate competition from the perspective of industry competition. He believed that the competitive environment of enterprises is composed of enterprises, suppliers, buyers, substitute manufacturers, potential entrants and other elements. Abouzeedan et al. (2001) established the SIV model and used it to analyze the factors affecting enterprises' performance. Xi Yumin (2001) divided the external environment into hard and soft environments. Hard environment includes natural environment and infrastructure, and soft environment includes human environment, economic environment, political environment, market environment, technical environment, government environment and enterprise network environment. Zhang Hui et al. (2012) constructed the external environmental assessment index system and impact mechanism model from two aspects of supply and demand, and analyzed the impact on operation and development of telecom enterprises using panel data. Gong Dehua (2014) constructed an external environment evaluation model based on life cycle theory, and gave the calculation method to get the evaluation index of external environmental factors. Zhang Erhong and Lu Siwei (2014) analyzed the external environment of Tianjin enterprises from seven aspects: policy and legal environment, social

and cultural environment, financing environment, market environment, talent and technology environment, social service environment and industrial environment. In general, corporate environment analysis has yielded rich results in evaluation research currently. But there are not many studies based on ecosystem theory, and there are fewer studies based on the characteristics of grid companies. In view of this, this paper takes grid enterprises as the research object, analyzes the grid industry ecosystem, constructs the strategy and planning environment analysis model and evaluation system, and provides theoretical support and application tools for the grid enterprise strategy and planning environment analysis.

2. Strategy and planning Environmental Analysis Model Construction

At present, power grid enterprises are facing complex external environment. The new economic normal, the energy revolution, and the power system reform are changing the environment of grid enterprises rapidly. In this context, in order to gain competitive advantage, a company must develop a new vision, realize coordinated development with other enterprises or entities in the outside through the complementary advantages and resource sharing. Therefore, the analysis of the strategy and planning environment of power grid enterprises should study the ecological circle and ecological relationship with stakeholders of the company from the perspective of ecosystem. Compared with the traditional strategy and planning environment analysis, enterprise ecosystem not only studies the environment from the perspective of the enterprise itself, but also puts the enterprise in the whole ecosystem and ecological relationship, emphasizing relevance, synergy and integrity. It is more suitable for the current complex environment. This paper constructs the strategy and planning environment analysis system of power grid enterprises, including three levels: macro environment, industry environment and core ecological environment.

2.1 Macro environment

According to the PEST model, combined with the characteristics of the grid enterprise business, the macro environment is divided into five aspects: political and legal environment, economic environment, natural and social environment, technical environment and international environment. Specifically, political and legal environment refers to the political and legal elements that affect or restrict the development of power grid enterprises. They're the basic guarantee for long-term stable development of the company to obtain support of the state and obtain its legitimate rights and interests during the development process. Economic environment refers to the socio-economic conditions and country's economic policies that affect the survival and development of power grid enterprises. Compared with the political and legal environment, the impact of the economic environment on the production and operation of enterprises is more direct and specific. Natural and social environment refers to the changes of the natural environment, social structure, and cultural concepts around the grid enterprises. The scope of natural social environment is relatively wide, and the impact on enterprises is relatively straightforward. It is a factor that must be considered when making major decisions such as investment arrangements and service innovation. Technical environment refers to the collection of technological elements in the environment which are related with grid enterprise. At this stage, science and technology are rapidly developing and changing. The impact of the technological environment on enterprises may be creative or destructive. Enterprises must anticipate the changes brought about by these new technologies in order to make corresponding strategy and planning decisions. International environment refers to the domestic policies and foreign environment that affect the international development of enterprises.

2.2 Industry environment

From the perspective of business attributes, power grid enterprises regard the construction and operation of power grids as their core business, and the energy and power industry is their basic industry. The change and development of energy and power will have a direct and far-reaching impact on the overall development of power grids and enterprises. From the perspective of industry

characteristics, the most important change in the power industry in recent years is the implementation of a new round of power system reform, which will fundamentally change the development pattern and mode of the power industry and change people's requirements for services. Therefore, it is necessary to analyze the reform environment separately. At the same time, domestic power grid enterprises should also compare to the international first-class energy and power enterprises. Therefore, the dynamics of industry benchmark enterprises should also become the content of company environmental tracking and analysis. In the end, the company's industrial environment includes energy environment, power environment, reform environment, and industry benchmark enterprises. Specifically, energy environment refers to the national energy development policies, levels, trends and other factors. Power environment refers to the level, trend and overall demand of the country's power development. Reforming environment refers to the relevant elements of the new round of power system reform. Industry benchmarking companies, mainly including the trend of world-class energy and power companies.

2.3 Core ecological environment

From the perspective of business activities, power grid enterprises are the bridge and link between power generation enterprises and users. They form a close industrial chain relationship. From the perspective of regulatory nature, the power grid industry is a typical government-regulated industry. Especially in the context of power system reform and state-owned enterprise reform, power grid construction, transmission and distribution prices, operation management and benefits will be strictly regulated and restricted. From the perspective of industry attributes, power grid enterprises belong to public utility enterprises, and serving users is the basic mission of power grid enterprises. The advancement of the reform has transformed the distribution of electricity business from monopoly to market competition. Therefore, the company's core ecological environment mainly includes four aspects: the relationship with the government, the relationship with the power generation enterprise, the relationship with the user, and the relationship with the competitor. Specifically, the relationship with the government refers to the relationship between the company and government agencies and departments, such as the State-owned Assets Supervision and Administration Commission, the National Development and Reform Commission, and the Energy Bureau. The relationship with power generation companies refers to the relationship between the company and power generation companies, such as China Huaneng Group, China Datang Group, China Huadian Group, National Energy Investment Group, and State Power Investment Group. The relationship with the user refers to the relationship between the company and downstream users, such as local residents, industrial and commercial enterprises. The relationship with competitors mainly refers to the relationship between the company and the competitors in the placing electricity market.

Strategy and planning environment analysis framework of power grid enterprises is in Figure 1.

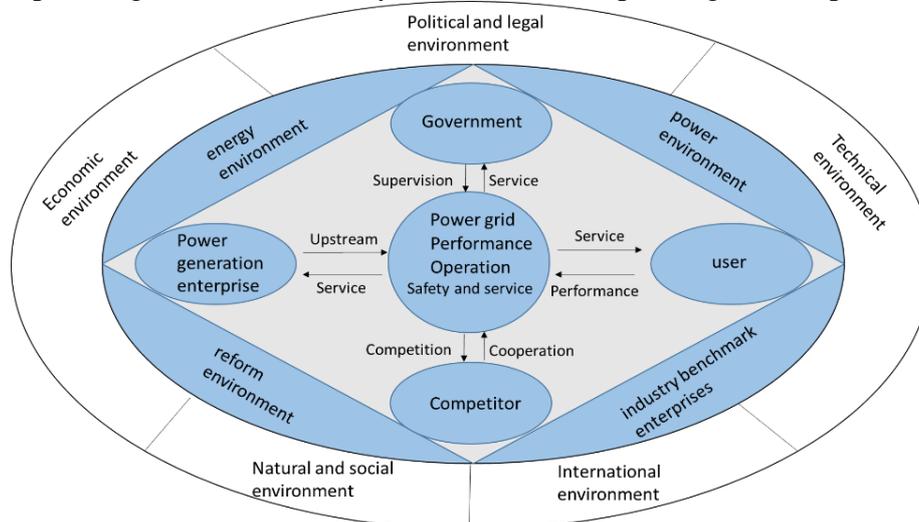


Fig. 1 Strategy and planning environment analysis framework of power grid enterprises

3. Strategy and planning Environmental Evaluation System Construction

3.1 Evaluation Index System Construction

According to the grid enterprise strategy and planning environment analysis framework, the content of each environmental dimension is analyzed to form a strategy and planning environmental evaluation index system.

In the macro environment evaluation, the political and legal environment mainly includes the policies promulgated by the state or region, the changes of party and government leaders, the promulgation of laws and regulations, and the enforcement of laws, such as “Four Comprehensive” strategy and planning layout, leadership changes of provincial party committee secretary and governor, the promulgation or revision of laws and regulations that are closely related to the company, such as power law. The economic environment mainly includes economic development level, economic structure, macroeconomic policies, etc., such as GDP, industrial structure, and industrial policies. The natural and social environment mainly includes the natural environment, social development, lifestyles and concepts, and public opinion, such as natural disasters, urbanization and new rural construction, changes in consumer attitudes, and media public opinion on companies. The technical environment mainly includes the science and technology policies and the development trends, such as technological innovation systems and major technological breakthroughs. The international environment mainly includes international policy and international environment, such as the national “Belt and Road” initiative and the political, economic and social environment of countries where the company has invested or prepared to invest.

In the industrial environmental evaluation, the energy environment mainly includes energy policy, energy structure, total energy, etc., such as national or regional energy development planning, energy production or consumption structure. The power environment mainly includes the supply and demand of electricity, and the proportion of electricity in the terminal consumption. The reform environment mainly includes transmission and distribution price reform, distribution power reform, and power market reform, such as accounting and approval of transmission and distribution prices, progress of incremental power distribution pilot projects, development of power sales companies, and electricity market transactions. The industry benchmarking enterprises mainly include the trends of world-class energy and power enterprises and domestic outstanding central enterprises.

In the core ecological environment evaluation, the relationship with the government mainly includes the relationship between government and enterprises, service requirements, regulatory requirements, such as government-enterprise cooperation, government inspection, profit assessment, market supervision and so on. The relationship with power generation companies mainly includes for cooperation with power generation companies and new developments of power generation companies, whose new requirements power grid enterprises should be meet. The relationship with users mainly includes user satisfaction and user structure, ideas, needs and new requirements for grid companies. The relationship with competitors is mainly the cooperation with competitors and the impact of the dynamic development trend, strategy and planning layout and market strategy of the competitors on the grid enterprises.

Strategy and planning environment evaluation index system of power grid enterprises is in Table 1.

Tab.1 Strategy and planning environment evaluation index system of power grid enterprises

Evaluation dimensions		Sub-dimensions
Macro environment	Political and legal environment	Policies promulgated by the state or region
		The changes of party and government leaders
		The promulgation of laws and regulations
		The enforcement of laws
Economic environment	Economic environment	Economic development level
		Economic structure,
		Macroeconomic policies
Natural and social environment	Natural environment	

		Social development
		Lifestyles and concepts
		Public opinion
	Technical environment	Science and technology policies
		Science and technology development trends
	International environment	International policy
		International environment
		Energy policy
	Energy environment	Energy structure
		Total energy
		Supply and demand of electricity
	Power environment	The proportion of electricity in the terminal consumption
Industrial environmental		Transmission and distribution price reform
	Reform environment	Distribution power reform
		Power market reform
		The trends of world-class energy and power enterprises
	Industry benchmarking enterprises	The trends of domestic outstanding central enterprises
		The relationship between government and enterprises
	The relationship with the government	Service requirements
		Regulatory requirements
		Cooperation with power generation companies
Core ecological environment	The relationship with power generation companies	New developments of power generation companies
		User satisfaction
	The relationship with users	New requirements
		Cooperation with competitors
	The relationship with competitors	The dynamic development trend

3.2 Equations Evaluation steps and methods

Through the above analysis, it is found that the strategy and planning environmental evaluation is mainly qualitative indicators. Considering that qualitative indicators are difficult to quantify and standardize, this paper uses the combination of expert scoring method and level description method. Firstly, these qualitative indicators are quantitatively transformed, then the weights of each index are determined, and finally the strategy and planning environment is evaluated. The evaluation basis are determined as follows:

Table 2 The evaluation basis of strategy and planning environment

Score	Evaluation r basis
-3	The external environment is very poor, which will make the strategy and planning goals not achieve on time, and there is a very big gap with the target.
-2	The external environment is poor, which will make the strategy and planning goals not achieve on time, and there is a big gap with the target.
-1	The external environment is a little poor, which will make the strategy and planning goals not achieve on time, and there is a gap with the target.
0	The external environment has little impact on strategy and planning objectives.
1	The external environment is a little good, which will make the strategy and planning goals.
2	The external environment is good, which will make the strategy and planning objectives significantly ahead or exceed.
3	The external environment is very good, which will make the strategy and planning objectives significantly advanced or exceeded.

3.3 Empirical analysis

Taking A grid company as the research object, the paper sets weight and evaluate the strategy and planning environment. The result shows that the weights of the macro environment, industry environment, and core ecological environment are divided into 0.31, 0.33, and 0.36. And A company's strategy and planning environment comprehensive score is 0.064 points, which means that the overall strategy and planning environment is slightly better than the past and the strategy and planning goals are expected to be achieved on time.

4. Conclusions

Based on the industry ecosystem theory, this paper constructs the strategy and planning environment analysis framework and evaluation system of power grid enterprises from the three aspects: macro environment, industry environment and core ecological environment. And it carries out empirical analysis taking A grid enterprises as the research object. The results show that the overall environment of A enterprise strategy and planning environment is good. Specifically, political and legal environment and economic environment have a favorable impact on enterprise development, but the power reform environment and competitor environment have certain adverse effects on the realization of corporate strategy and planning objectives. This paper provides theoretical and methodological support for strategy and planning environmental assessment of grid enterprises, which could promote the scientificity and systematicness.

Acknowledgement

This research was financially supported by the State Grid Corporate of China Science and Technology Project: Research on Influencing Factors and Mechanism of Corporate Planning Objectives.

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