



The Influencing Factor Model of Organizational Form in Power Grid Business

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ABSTRACT.Currently, State Grid Corporation of China(State Grid) is in the critical period of building a world-leading energy internet company with Chinese Characteristics and promoting the implementation of the "one body and four wings" development layout. The new trend of energy transformation and the rapid development of new technologies, such as "Big data, cloud computing, Internet of Things, artificial intelligence, etc.", all put forward urgent requirements for the transformation and upgrading of power grid. With the changes of policy, market, technology, strategy and organizational factors faced by power grid business, the organizational forms of power grid business also need to be adaptively optimized and adjusted. How to scientifically determine the organizational forms of different development stages of energy Internet construction and what characteristics the organizational forms have in each stage will directly affect the organization and management foundation of energy Internet construction. The purpose of this study is to deeply analyze the influence and requirements of energy transformation trend and development strategy on the construction of energy Internet, and combine the influencing factors of organizational form evolution, analyze the influencing factors of organizational form selection of energy Internet company, and build an organizational form selection model, so as to provide organizational form selection and optimization direction for power grid business to build energy Internet.

Keywords: Power grid business, Energy internet, Influencing factors, Organizational form.

1 Introduction

In order to comprehensively deepen the reform and implement the requirements of high-quality development of central enterprises, State Grid Corporation of China (State Grid) has put forward the strategic goal of building a world-leading energy internet company with Chinese Characteristics, which has put forward higher requirements to optimize and transform the power grid business management mode, reduce operating costs and improve customer service quality. State Grid needs to improve the customer service quality by improving the organizational system, optimizing business processes and strengthening platform support in order to meet cus-

customer needs and solve outstanding problems. At present, there are still some problems in power grid business, such as slow customer response speed, insufficient horizontal coordination, insufficient distribution, adjustment and terminal integration, and partial business processes, which can't fully meet customers' needs. It is urgent to optimize the organizational and management mode of State Grid. Therefore, it is necessary to carry out the research on the key technologies and management strategies of the organizational and management optimization in power grid business [1].

The strategic goal of State Grid has put forward new requirements on how to optimize organizational management mode under the new strategic system. The revolution of energy production and consumption is booming. From the perspective of functional form, the future energy company will continue to evolve to the energy Internet, and building an open and shared energy Internet with multiple technologies will become the inevitable trend of power grid development. The strategic goal requires State Grid to accelerate the collectivization, intensification and lean construction, and continuously promote the transformation and upgrading of business and management. In particular, it is necessary to study the group management and control mode, organization and management operation mechanism and business strategy that are suitable for new formats and modes such as integrated energy services and energy e-commerce, so as to promote the development of power grid business with high quality [2].

The electric power system reform and the reform of state-owned enterprises require power grid business to speed up the implementation of classified management, further establish and improve the market-oriented management mechanism, and put forward new requirements for optimizing the power grid business system and mechanism. Both major reforms require to refine power grid business classification. While standardizing the operation of regulated business, State Grid should pay more attention to the differentiated control of regulated and unregulated power grid business, and introduce market-oriented management mechanism in unregulated business. State Grid need to constantly improve the modern enterprise system, actively promote the mixed ownership reform of market competition business, constantly improve the corporate governance system, perfect the incentive and restraint mechanism, and break the institutional obstacles and deep-rooted contradictions that restrict the development of State Grid. In addition, the reform of state-owned enterprises also requires to speed up the management of "big company diseases", deepen "two-level legal entity and three-level management", further reduce the number of staff and increase efficiency, and promote enterprises to slim down and keep fit [3].

With the rapid application of emerging technologies such as "Big data, cloud computing, Internet of Things, artificial intelligence, etc.", power grid business operation is facing new opportunities and challenges, and it is imperative for power grid business to comprehensively improve its customer service capability. At present, emerging technology has become the core driving force of traditional industry upgrading and emerging industry development and the leading force of value reengineering. State Grid must grasp the trend of deep integration of energy revolution and digital revolution, strive for strategic initiative, seize new opportunities, occupy commanding heights, and give full play to the information-driven leading role and value

creation, so as to inject new impetus into the company's production, operation and innovation. With the penetration of the Internet and the development of smart grid, massive data has become the core factor of production, and the application of emerging technologies has enhanced customers' demand for product and service experience, forcing power grid business to realize service integration. It is mainly reflected in two aspects: First, deep data mining will change the traditional marketing methods, and the company should accelerate the lean management of customer service. Second, the integration of power grid business service has a great demand for compound talents, which promotes the structural adjustment of the company's human resources, and further requires to enhance the value creation ability of employees [4].

2 Analysis of influencing factors of organizational form selection

Regarding the influencing factors of organizational form, the contingency view of organizational form holds that the organizational form is the result of the joint action of internal and external factors. It is influenced not only by external environment such as policy environment, market competition and technological change, but also by internal factors such as strategy, enterprise life cycle and enterprise scale. There is no fixed "best" organizational form. The choice of organizational form in different periods should be consistent with the internal and external environment, changing with time, adapting to local conditions and moving with the situation. Therefore, the choice of organizational form should start from three aspects: systematic, situational and dynamic, and adjust according to the dynamic development of the enterprise to keep a dynamic balance with the organizational environment.

2.1 Political Factors

As an important social environment factor, political factors and its running conditions are the important factors that affect the survival and development environment of enterprises, and are the most important component of the macro environment. Political factors mainly include national policies, political system reform, foreign trade policies, national laws and regulations and other factors. Political factors are one of the important macro environments that enterprises face when choosing organizational forms. For state-owned enterprises, the adjustment of political factors, especially policy factors, has an obvious influence on the organizational form of enterprises. The reform and development of state-owned enterprises is highly policy-oriented, and to a large extent, it is guided and regulated by national policies and national strategies. The nature of state-owned enterprises further determines that their organizational development and shape choice should serve more for the country's functional orientation, the development needs and policy requirements of the country.

2.2 Market Factors

To maintain a sustainable competitive advantage, enterprises must always pay attention to market changes. Typical market factors, such as market competition, changes in customer demand, etc., profoundly affect the business development and form choice of enterprises. At present, with the deepening of social division of labor and even international division of labor, as well as the substantial reduction of communication and transportation costs, the development of enterprises is no longer limited to a certain region, but is being integrated into an inseparable whole with the global market. In order to adapt to the internationalization of products, markets and employment, enterprises must consider the adjustment and change of organizational structure and form from the perspective of internationalization. In addition, with the intensification of market competition, enterprises also need to constantly adjust their business layout and staff, and constantly adjust their business priorities and corresponding organizational forms. At the same time, with the development of social economy and the improvement of people's living standard, the demand of customers is becoming more and more diversified and unpredictable. This puts forward higher requirements for enterprises' market response ability and customer demand insight ability. How to be closer to the market, understand and meet customer demand more deeply will have a profound impact on the adjustment and change of organizational form and structure.

2.3 Technical Factors

Technological progress can not only change the production model, but also the business model, which is one of the important incentives for the change of enterprise organizational form and structure. Technical factors include overall technical level, industry technical level, enterprise technical level and technical innovation level, etc. The complexity of technology and its corresponding production process determine the shape, structure and scale of enterprise organization. Technological change and innovation will cause corresponding changes in the organizational form of enterprises. For example, with the emergence of Internet technology, the business, marketing and management processes of enterprises tend to be online and invisible, making it possible to integrate resources across enterprises and regions. In order to adapt to this kind of technological progress, the organizational form is also changing to the direction of ecology and virtualization. Therefore, the organization is influenced by the technical level and has strong technical characteristics.

2.4 Strategic Factors

Strategy is the overall planning of an enterprise for its long-term survival and development in the face of rapidly changing business environment. Strategy can determine the development direction, competitive strategy and business scope, so that the enterprise can make full use of all kinds of opportunities in the environment, thus being in a leading position in the competition. Strategic factors, such as strategic transfor-

mation, strategic development direction adjustment, business strategy, marketing strategy, etc., will directly affect the organizational form. The adjustment and change of the strategic direction in different periods will profoundly affect the response of enterprises to the external environment such as policies, markets and technologies, as well as the choice of organizational forms and business development. Therefore, the choice of organizational form should adapt to the change of strategic development direction. For example, if an enterprise adopts a low-cost leading strategy, it will be more inclined to implement a pyramid-shaped management model and authoritarianism. Considering the cost factor, in this kind of organization, there will be strong central power, strict cost control, standard operating procedures, close supervision and limited employee authorization. This also determines that the choice of organizational form will be vertical, and the organizational structure will be functional management, with a clear organizational hierarchy. However, enterprises that implement differentiation strategy will pay more attention to innovation, reward employees' innovation, and continue to develop, relying on quality and technological leadership to gain more markets and customers. Under different strategic mode, the organizational structure will be flatter, and the choice of organizational form will be more digital.

2.5 Organizational Factors

Organizational factors are the important basic factors that should be considered in the process of designing and selecting organizational forms. Organizational factors, such as organizational scale and organizational development stage, directly affect the choice of organizational form. Enterprises usually go through different stages of development, such as start-up, growth, maturity, decline and regeneration. Each stage has different characteristics and faces different risks, which requires enterprises to adjust their organizational form and structure to meet the needs of different stages of development. At the start-up stage, the scale of enterprises is small and the complexity of activities is low, which is suitable for vertical organizational form and functional organizational structure. At the stage of growth and maturity, the scale of enterprises is growing rapidly, and the environment faced by middle-level and grass-roots units is becoming increasingly complex, so they need to have more decision-making power. Therefore, it is more suitable for digital organizational form and flatter matrix organizational structure. Therefore, enterprises should fully consider the scale and stage of enterprise development when choosing organizational form.

3 Analysis on the Influencing Factors of the Organization Form Choice of STATE GRID

To realize the strategic goal of building an energy internet company, State Grid is required to comprehensively consider the influencing factors at the policy level, market level, technology level, strategy and organization level in its organizational form selection, thoroughly implement the national reform policy, take the customer market as the center and technical data as the driving factor, and promote the company's or-

ganizational form upgrade, organizational structure optimization and high-quality development. The strategic goal in the new period requires State Grid to operate and manage enterprises with more advanced and lean means, adapt to market changes and customer needs with more flexible institutional mechanisms, and create an organizational form that adapts to the development of energy internet.

3.1 Policy Level

At the policy level, the reform of power system focuses on key tasks such as the reform of transmission and distribution price and the liberalization of distribution electricity, which has a significant impact on State Grid in terms of electricity price, electricity quantity and market entry. First, the reform of transmission and distribution price has prompted the traditional business model of power grid business to make profits by relying on the difference between purchase and sale, and the revenue space has been compressed, which requires to actively change the traditional management mode and increase the profit growth point by accelerating the expansion of new business areas and innovating business models. In order to adapt to the change of management mode and the needs of new business development, the organizational form has changed from traditional vertical to more digital and ecological in the new era. Second, the investment in incremental distribution has been liberalized, and relevant policies have encouraged social capital to enter the field of incremental distribution network in an orderly manner. The competitors in local markets have increased, and it is facing the pressure of shrinking potential market share. This requires to fully evaluate the impact of relevant policies such as power system reform on the power grid business development and market competition, further handle the relationship between the operational stability of large enterprises and the flexibility of market response, and improve the market response speed by simplifying administration and decentralization, compressing the decision-making chain, adjusting organizational structure, and optimizing customer service processes. Therefore, the selection and design of organizational form should highlight the guiding role of the policy environment for organizational change, and ensure that the business direction meets the requirements of the country's major policies and policies, and conforms to the country's value orientation for super-large state-owned enterprises. When optimizing organizational structures at all levels, it is necessary to ensure that the power system reform, energy revolution, and carbon neutral policies can be implemented in practical work, and to create an organizational form of energy Internet enterprises that is policy-oriented, efficient, and effective.

3.2 Market Level

At the market level, the key to achieve the goal of energy Internet company is to form lean service capabilities, improve the company's agility and quick response to customer needs, and provide customers with higher quality services at the market level. Firstly, State Grid needs to accurately determine the market positioning and deeply segment the customer types. According to key factors such as customer attributes,

power consumption behaviour and power consumption potential, and based on big data technology, further subdivide customer types. Secondly, State Grid needs to improve the customer energy database and accurately tap the customer demand. Accelerate the digitization process of customer demand information collection, and accelerate the establishment of a large database of customer consumption for different channels such as online and offline, as well as different electricity consumption scenarios such as industrial electricity consumption, smart home systems and household energy consumption. Thirdly, State Grid needs to strengthen customer service interaction ability and enhance customer service experience. It is crucial to give customers the right to choose the power consumption plan, accurately determine the service product types and service plans on the basis of accurately tapping customer needs, and continuously improve customer service experience. Therefore, in order to cope with the market competition and changes in market demand, State Grid needs to adjust its organizational form, structure and management mode, establish its business process and organizational mechanism to adapt to the open concept, strengthen its communication with customers and other external markets, and reshape its organizational form to break down institutional barriers and enhance its market response ability, so as to respond to the competition more flexibly and efficiently.

3.3 Technical Level

At the technical level, in order to achieve the strategic goal, the company needs to change the development mode from asset-driven to factor-driven, change the past development mode of valuing assets, and rely more on technological innovation and application. From the perspective of innovation and development of power grid technology, the innovation and application of power grid technology will gradually change the traditional energy grid system, information support system and value creation system of power grid. In order to achieve the interconnection of energy networks, the traditional power grid form and operation mode must also be more open, flexible and efficient. From the point of view of the development and application of advanced information, network and control technologies such as "Big data, cloud computing, Internet of Things, artificial intelligence, etc.", the development and deep integration of these new technologies in the power grid will greatly improve the digitalization, intelligence and interaction level of the power grid, enhance the power grid resource allocation and value creation ability, and greatly promote the digital transformation of the power grid and the transformation and upgrading of the power grid form. In the process of power grid transformation, the organizational form will change from traditional vertical to digital and ecological, and the management mode will also change to strategic and financial management and control. Therefore, when designing the organizational form, the company needs to build a technology-oriented organizational structure to better empower the organization and enhance its flexibility. At the same time, it is necessary to put the technology application into the first-line production organization in the process of organizational restructuring, make full use of advanced technologies such as big data, carry out process reengineering and organizational restructuring for traditional businesses, and provide technical support and organiza-

tional construction for emerging value-added businesses, so as to greatly enhance the factor-driven ability of State Grid.

3.4 Strategic Level

At the strategic level, since its establishment, the strategic objectives have undergone three changes and adjustments. In 2005, the company explicitly proposed to build State Grid Corporation into a modern company with "one strong and three excellent". At the same time, the company began to build a "three intensified management and five big systems". With the implementation of the strategic goal of "one strong and three excellent" and the construction of the "three intensified management and five big systems", the management mode of the company gradually tends to be intensive, and a vertical organizational form is established. In 2019, State Grid put forward the strategic goal of "three types and two networks, world-class" and the strategic path of "one leading and three changes", which drew a blueprint for the development of State Grid in a new era. In 2020, State Grid put forward the strategic goal of building a world-leading energy Internet company with Chinese characteristics and the strategic path of "one lead, two drives and three upgrades". The transformation and adjustment of strategic objectives in this period requires the company to change its thinking in development direction and business focus in time. In order to meet the requirements of transformation and development, it is urgent to upgrade from the traditional vertical organizational form to the digital and ecological organizational form. Therefore, when adjusting and optimizing organizational form, it is necessary to highlight the leading role of strategy in organizational change, ensure that the business direction conforms to the strategic development direction of energy internet company, ensure that the organizational form selection meets the strategic development requirements of energy internet company, and create an organizational form that matches the strategic goals.

3.5 Organizational level

At the organizational level, based on the new development stage, the development philosophy OF State Grid has changed to be more open, transparent, interactive and shared, and has changed from a single power field business to energy and multi-domain business. On the basis of traditional power grid business, industry, finance and international business, its business types have become more diversified, and comprehensive energy services, various platform-based businesses and value-added derivative businesses that meet the needs of new markets have developed rapidly. In the process of building an energy Internet enterprise, the company needs to gradually weaken the organizational boundaries with clear barriers. From the perspective of organizations, it is urgent to strengthen the openness of the structure among organizations within the group. From the organizational structure with clear business positioning of each unit in the group to the organizational structure with moderate cross-border business boundaries and coordinated development among all units. From the outside of the organization, the company needs to establish a symbiotic value ecologi-

cal network with customers, upstream and downstream enterprises, supply chain enterprises and external enterprises. The members of the ecological network should establish the relationship of equality, mutual benefit, common resources, value creation and benefit sharing. Therefore, the organizational form is more and more characterized by digitalization and ecology. When choosing organizational form, we need to fully consider the characteristics and requirements of the company's current organizational development, highlight the characteristics and special needs of power grid enterprises, and make sure that the organizational form of State Grid is based on the current organizational development status and the development direction of energy internet company to meet the needs of energy development and transformation.

4 Construction of Influencing Factor Model of Organizational Form selection

According to the degree of influence of various factors in organizational form selection, the policy factors, market factors, technical factors, strategic factors and organizational factors are included in the scope of core influencing factors, and the influencing factor model of the organizational form selection in power grid business for building an energy Internet company, namely, the "five-element model", is constructed to guide the company in its organizational form selection. Through the model of influencing factors of organizational form selection, this paper comprehensively sorts out and analyzes the internal and external situations faced by State Grid, and comprehensively considers the influence of the "five factors" of policy environment, market competition, technological change, strategic goal and organizational development change on the organizational form selection of State Grid, so as to accurately excavate and identify the importance of each influencing factor to organizational form selection, and provide theoretical tools and methodological support for building organizational forms suitable for the development of energy internet company.

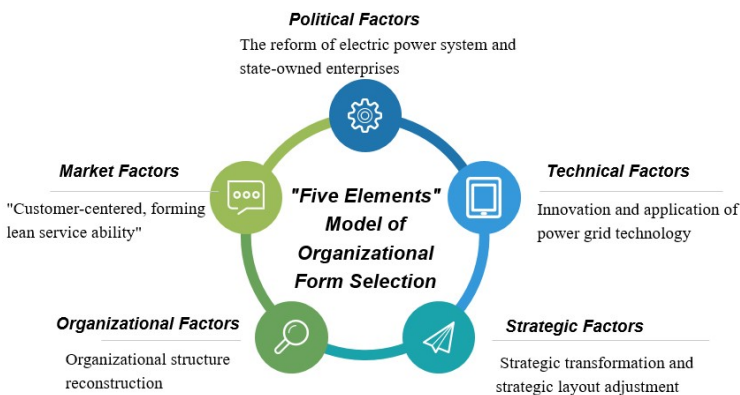


Fig. 1. "Five Elements" Model of Organizational Form Selection in Power Grid Business

Source: drawn by the author.

Combined with the "five-element model" of organizational form selection, this paper constructs the influencing factor model of organizational form selection of energy internet enterprises. Policy, market, technology, strategy and "five elements" of organization have different influences on organizational form selection. When designing and selecting organizational form, it is necessary to comprehensively consider the influences of the five elements, adjust and optimize the organizational form in a timely manner, and continuously promote the optimization and upgrading of the organizational form of the company. Under different organizational forms, organizational characteristics are quite different. As for the vertical organizational form, it is more suitable for small and medium-sized enterprises in the early stage of development. The organizational structure is mainly linear and functional, and the management and control mode focuses on operational management, with vertical management and low degree of decentralization. As for the digital organizational form, it is more suitable for large and medium-sized enterprises in the growth period. The organizational structure is mainly composed of business division structure and matrix structure, while the management and control mode focuses on strategic management and control. It is mainly vertical management, with the characteristics of horizontal management and a high degree of decentralization. As for the ecological organizational form, it is more suitable for mature platform enterprises and ecological enterprises. The organizational structure is mainly network-type, and the management and control mode focuses on financial management and control, mainly on horizontal management, with a very high degree of decentralization [5].

5 Conclusion

It takes a long period of development for State Grid to build an energy Internet company. In this process, the internal and external environment faced by the organization is constantly changing, and the influencing factors and organizational characteristics of the organization form have different performances in different periods. State Grid should timely evaluate the development and changes of the policy, market, technology, strategy and the "five elements" of the organization, and dynamically adjust and optimize the organization form suitable for the construction and development of the energy Internet company according to the characteristics and development changes of the organizational characteristics.

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