Research on Operation Mechanism optimization framework of Power Grid Business Organization under the new circumstances

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Abstract. The construction of Energy Internet enterprises drives the deep coupling between external power supply service and internal specialty synergization of Power Grid Enterprises. Based on the situation of Energy Internet construction and the requirements of "strong front-end, big back-end" platformized organization mode, this paper explores and puts forward the framework of operation mechanism optimization of power grid business organization, which can provide reference for power grid enterprises to promote organizational reform.

1. Introduction
In the context of the accelerated development of energy marketization and digitalization, energy technology and digital technology develop integrated, the reform of the power system and the reform of state-owned and state-owned enterprises speed up, with the increasing demand for advanced services in energy consumption and the deep change of power network form and operation mode, the power network operation organization mode is leaping over from linear function system to platformized organization. In particular, the construction of the Energy Internet has led to an overall transformation of the energy and power industry infrastructure, business forms and industrial structure, focus on how to optimize the framework of the organization operation mechanism under the power grid business platformized organizational change, which has great significance for power grid enterprises to play the key role of industrial ecology and promoting the development of energy industry in market, digital and ecological development. Meanwhile, In this study, under the background of market-oriented industrial transformation, revealing the optimization mechanism of the internal mechanism of the platformized organization change at the micro-business level, has great theoretical significance to analyze the interaction between organizational mechanism and organizational model from the perspectives of "reinforcement" and "matching", and further refines the practical model of organizational change in the digital age.

2. External situation and requirements of the Energy Internet
In the new era, the construction of Energy Internet needs to fully grasp the development trend of energy marketization, cleanness and intelligentization, which drives power grid enterprises to accelerate the evolution of organizational operation mechanism with the focus of service quality and multi-specialty synergization.
2.1. Accelerating of the marketization of electricity

With the deepening of the new round of power system reform, the energy and power industry is entering a new stage of power market scale inventory optimization, resource allocation marketization and multiple energy integrated development.

In terms of the competitive pattern, the main body of traditional market competition is increasingly diversified, the gradual opening of the electricity market has attracted a large amount of social capital, and innovation & entrepreneurship in electric energy are running high. The change of competition pattern, firstly, drives power grid enterprises speeding up the establishment of modern service system through changing service concept and service mode, optimizing service organization, to improve service capability and quality in all directions, and improving customer service satisfaction. Secondly, power grid enterprises are required to change the relatively rigid power grid business organization and management mode, especially improving the efficiency of human, property and other resources, deeping multi-specialty synergization on muti-dimension, to reduce organizational operating costs and serving market front-end.

From the perspective of business pattern, new energy forms, such as multiple energy services, are constantly emerging, the competition of traditional power grid business intensifies and the emerging market rises rapidly, the cross-border competitive enterprises and the traditional energy enterprises have formed an unprecedented competitive and cooperative relationship, which lead to the Energy Internet business developing with the feature of clear core, cross-border extension, boundary mold. The change of business pattern, firstly, innovates traditional power supply service capacity to meet the user's safe, convenient and efficient electricity demand; Secondly, calls for electric power enterprises playing a core role with the advantages of platform hub, integrating service resources with high efficiency, reshaping marketing service process, breaking down professional horizontal barriers, promoting management focus to the grass-roots level, and strengthening the orderly implementation of professional authorization.

![Energy Internet business system](image)

2.2. Energy Internet technology to accelerate iterations

The development trend of energy internet technology is safe, reliable, clean and low-carbon, economical and efficient, intelligent and open. Meeting the diverse needs of users and cross-domain integration and
interaction will accelerate the development of energy internet technology toward intelligent and highly openness.

The information technology revolution is in the ascendant World-widely. The accelerating convergence of new technologies such as big data, cloud computing and the Internet of Things with traditional industries drives profound changes in production and consumption patterns. Firstly, energy and power technologies change the traditional business service model, lead power system technology systematic upgrade, which will strengthen the professional synergization of marketing, transportation inspection and dispatch, strengthen the timeliness of resource command and dispatch, and improve the market response ability. Secondly, digital technology improving the level of intelligent power supply services, which will promote accurate perception of customer needs, integration of online and offline services, integration of platformized resources, conducting faster, more accurate and more efficient service to customers.

Under the new technology and new mode, there are systematic changes in the shape, operation and operation of the power grid. Business organization pattern will present the new characteristics of fast iteration, open sharing, network cooperation, etc., which requires power grid business operation organizations to have higher operational flexibility, stronger platform convergence capacity, more accurate front-end enabling level. Firstly, strengthen the information platform’s support in the whole business process, promote the process from series to parallel, which achieves the integration and simplification of the process, adjustment and optimization. Secondly, emphasis on data-driven management for front-end empowerment, on the one hand, supports the management focus of the five major professional functions to tilt forward and enhance the autonomous decision-making authority of the business grass-roots level; on the other hand, strengthen the online monitoring efficiency and supports the front-line employees to deploy resources autonomously in a larger scope and at a higher level, raising the level of employee motivation.

3. Overall characteristics of Power Grid Operation Organization mechanism
The Energy Internet is a comprehensive upgrade of the power grid, an all-round upgrade and change of the development concept, network functions, technical features, and service and management mode. For power grid business, the construction of Energy Internet needs to adapt to the trend of power grid organization evolution and new needs of business value creation, match the "strong front end, big background" organizational model, gradually break the "closed, one-way, solidified" organizational mechanism, and explore the establishment of "platformized, intelligent, strong synergy" organizational mechanism.

Platformization is the essence. The core of the Platformization is to build a "service front-end, support back-end" power grid business service command platform, and in accordance with the platform-based organizational model to build organizational mechanisms, strengthen professional synergization, improve service quality, significantly enhance the Energy Internet enterprises’ organizational efficiency.

Intellectualization is the direction. Intelligentization is the key for power grid business to adapt to energy internet, and the core is to improve service quality based on high-quality energy products.

Strong synergy is the core. Strengthening multi-specialty synergization is the core problem of pyramid organization operation, and it is the base of the integration of management penetration and integration of marketing, distribution and dispatch of power grid enterprises in the new era.

4. Optimization framework of Power Grid Operation Organization mechanism
The environment for the existence and development of power grid enterprises is becoming more and more open, complex and dynamic. The service attribute and public attribute of power grid service which base on high-quality commodities, are more prominent. The organizational process of power grid business is no longer a pure closed production organization, but tends to interact with the external entities on the multi-level of resources, information, assets and modes.
The basis of operation organization optimization of power grid is the organic connection and two-way interaction between service quality and multi-specialty synergization, **the core mechanism is: based on the requirement of "strong front-end, big back-end" organization mode, the circulation interaction between external demand-driven and internal support mechanism, namely demand-driven mechanism and supporting mechanism.** "Service Quality" is the "starting point" for evaluating the operation level of power grid business organizations. It is based on meeting customers' demands for "better products, faster response and better experience", to drive enterprises to improve operating performance, strengthen customer stickiness, promote brand value-added, objectively reflect power grid business efficiency through strengthening the market response ability, improving the level of active service. "Multi-specialty synergization" is the "core" of the transformation of business organization to platformized organization, which is based on the multi-dimensional synergization of information, business and resources, continually improves the "quality of service" by providing mechanism support through the delegation of authority, process optimization, precision empowerment and information support.

Figure 2. Operation Mechanism Optimization Framework of Power Grid Business Organization

4.1. **Framework basis**

With the increasingly diversified missions of power grid enterprises to serve their own strategic transformation, help partner value creation, serve economic and social development, and promote energy and power transformation and industrial upgrading, the resource aggregation, innovation incubation and support driving functions of power grid business are highlighted. Driven by digitalization, marketization and ecologicalization, power grid business organizations accelerate the transformation to platformized organization.

**Digitalization** is the technical trend of industrial development and industrial development, and is the most essential technical feature of the Energy Internet. From the perspective of development, it is necessary to rely on digital technology to support the evolution of power grid business organization toward digitalization and intelligentization, and to promote the consolidation of the platformized organization foundation of the energy Internet.

**Marketization** is the core feature of the structural change and operation mode change of the energy industry, and the basic direction for power grid enterprises to promote internal change. It is necessary to rely on market-oriented mechanism to activate the innovation vitality and operation efficiency of organizations at all levels of power grid business, and to promote the overall improvement of service quality of power grid business.
Ecologicalization is the basic logic and evolution direction of the business development of energy enterprises, emphasizing the deep opening through “external sharing” and “fairness”, emphasizing enabling through technology, data and platform to promote Enablement, emphasizing promoting collaborative innovation through standard and mechanism construction.

(2) Demand-driven mechanism

Demand-driven refers to the continuous optimization of organizational mechanism to support the continuous improvement of service quality oriented by meeting customer needs. The core is to improve business capabilities, change service organizations, promote smart operations, and support the improvement of service initiative and demand response of front-end organizations in the front end of the business.

Path 1: Construction of intelligent operation service system. Equipment intelligence is to establish efficient and convenient service material base relying on intelligent power grid equipment. Service intelligence is to promote the innovation of online and offline service mode based on the intelligent service tools and the construction of data service center. Work intelligence is relying on the intelligent production equipment to support intelligent services with intelligent operations.

Path 2: Build “one-end organization” system. Relying on the construction of “integration of marketing and distribution” of all-round power supply service institutions, construction of the service window by “one-end organization”. Optimizing team setting, this is to strengthen the “front-line” task team coordination division of labor, to support the end of the business ability integration. Establishing big customer manager responsibility system, this is to strengthen the grass-roots service rights and responsibilities, to implement the institution of “one post with multiple responsibilities”. Completing the material allocation system, that is to optimize the allocation and reserve system of human, financial and property, improving the level of flexible scheduling and rapid support.

Path 3: Establish All-around service business system. Relying on basic power supply services, the operation and support capabilities of the whole chain business covering energy services are gradually expanded. Providing high-quality basic power supply services, that is to integrate online and offline service channels and means to improve the user experience. Expanding value-added extension services, that is to deeply excavate new demand of new energy scenarios for users and actively expand the scope of value-added energy services. Establishing customer consumption database, that is, build energy supply and demand docking interactive platform to assist in the development of emerging business relying on big data analysis tools.

4.2. Supporting Mechanism

Supporting Mechanism refers to under the framework of “strong front-end, large back-end” business organization mode, in addition to information support, Treating informative synergization as the key foundation, which supports management, business, resources synergies, and through decentralization authorization, process optimization and precise enablement to support “strong front-end” to continuously improve the quality of power supply service.

Informative synergization. Informative synergization focuses on the power handling, electricity consumption, service and other links closely related to users, also the demand of the distribution network scheduling, distribution network command, resource mobilization and business operation of service scheduling, on the base of power supply service command platform as the main carrier, supports the optimization of organizational mechanism of power grid business in the digital age such as monitoring and early warning, command and coordination, process control, analysis and evaluation, and promotes the organic connection between background professional management and front-end service, through the unified integration of information, platform operation, data sharing and data application.

Managerial synergization. The core of managerial synergization is to solve the problem of limited grass-roots mobile response ability and insufficient active service power caused by long management chain, multiple approval links and more professional assessment under the requirements of highly standardized and professional management under intensive management mode. It mainly relies on the support and guarantee of informative synergization for management mode and control ability, speeding
up the transformation of professional management orientation, launching the plan accordingly to vertical
deviation of authority, strengthen grass-roots synergy, promote management focus forward,
professional management integration and efficiency, which adapt to the high requirements of hierarchy
compression, authority optimization and strengthening incentive.

**Business synergization.** The focus of business synergization is to solve the contradiction between
external service demand and difficulty to improve the efficiency of business operation continuously.
The focus is changing the business process design under the logic of “professional”. According to the
concept of “professional support and business integration”, the information platform is included in the
key link of process reengineering, support the adjustment of the internal professional business approval
link and the cross-professional collaborative interface, excavate the organizational interface of
traditional power supply service and value-added extension service, and promote the mining of the
value-added potential and market competition advantage of front-end service.

**Resource synergization.** Relying on information synergization to monitor and adjust the whole
process of resource procurement, storage and deployment, combining with the needs of emergency
rescue, resource synergization reduces the uniqueness of high-intensive and rigid management of
resources, builds close link between resources specialization, intensive management and customer needs
and business process by appropriately delegating the power of autonomous decision-making and
allocation of resources to city and county companies, optimizing the reserve and allocation mechanism
of key resources according to business needs and processes.

5. Conclusion
In the new era, the construction of Energy Internet needs to comprehensively grasp the development
trend of marketization, cleanness and intelligentization. The core mechanism of power grid business
organization optimization is: based on the requirement of "strong front-end, big back-end" organization
mode, the circulation interaction between external demand-driven and internal support mechanism,
namely demand-driven mechanism and supporting mechanism.

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