Construction and Optimization of Enterprise-Level Process of Power Grid Enterprises by Modern Enterprise Management Theory

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Abstract. The Third Plenary Session of the 20th Central Committee of the Communist Party of China pointed out that we should improve the modern enterprise system with Chinese characteristics and speed up the construction of more world-class enterprises. World-class enterprises inevitably need world-class management system, the use of modern management theory to guide the construction of enterprise management system, for optimizing internal responsibilities and business processes, improve the efficiency of enterprise operation is of great significance. Based on the classical theory of modern management, this paper analyzes the basic characteristics of modern management system, focuses on the internal management responsibilities and business processes of power grid enterprises, and discusses how to change the trend of internal management responsibilities and business processes of power grid enterprises under the construction of modern management system. On this basis, for the power grid enterprises how to build enterprise-level process, put forward on the power grid enterprise management responsibility division and business process optimization thinking, for the power grid enterprises to promote the construction of modern management system and achieve sustainable development to provide a reference.

Keywords: Enterprise-level Process, Modern Management Theory, Full Cycle Management, Infrastructure Construction Project Management, Equipment Management, Business Expansion Management.

1 Introduction

1.1 Fundamental Characteristics of Modern Management Systems

Modern management system is an enterprise management system formed under the guidance of modern management theory[1]. Modern management schools, including management process school, system management school, decision theory school, etc., generally emphasize that enterprises must establish a clear, efficient and scientific management system in order to maintain competitiveness in the fierce market compe-

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tition. Enterprise management system is the general term of enterprise basic system, management system, management mechanism and management method. Modern enterprise management system is the inevitable product of enterprise management towards science, standardization, institutionalization, humanization and digitalization[2]. Under this background, the construction of modern management system is more and more showing the characteristics of specialization, lean and coordination.

First, pay more attention to specialization. The core of specialization lies in clear responsibilities. Once the responsibilities are determined, all personnel will complete corresponding tasks around the responsibilities, making the enterprise run more and more efficient. Once the company's strategic goals, missions and tasks change, the internal responsibilities will also be adjusted accordingly, to clarify the responsibilities of each department and position, to ensure that each employee can exert the maximum effectiveness in his or her professional field. At the same time, the internal structure of the department is flexibly adjusted to adapt to the changing market demand and business environment[3]. Specialization not only improves the efficiency and quality of work, but also promotes the career development and skill upgrading of employees, ensuring that enterprises maintain an edge in competition.

Second, pay more attention to lean. Lean emphasizes the operability of the system and standardization of the system process, and replaces repetitive and procedural work by digital means when necessary[4]. Modern enterprises are increasingly complex in organizational structure, business process, collaborative operation, etc., and are in urgent need of comprehensive collection and efficient circulation of internal information. Through the establishment and implementation of standardized management process, the use of digital and institutionalized means of management, can reduce waste, improve resource utilization, reduce the possible defects in the management process, so as to improve the management level of enterprises.

Third, pay more attention to synergy. Modern management systems emphasize collaborative management, through close cooperation and information sharing between various departments as well as with external partners and customers, to maximize the overall benefits and better achieve internal and external coordination. Internal synergy ensures efficient cooperation between departments and posts, while internal and external synergy improves the efficiency of cooperation between enterprises and external stakeholders by establishing good cooperative relations and communication mechanisms, thus enhancing the enterprise's market response ability and overall operational efficiency[5].

1.2 Trends in Management Business Processes in Power Grid Companies under Modern Management System Construction

With the continuous growth of power grid scale, continuous innovation of production technology, rapid development of emerging businesses and other productivity changes, the complexity of various management affairs and business processes of power grid enterprises is continuing to rise[6]. The construction of modern management system is not only a higher requirement for the construction of power grid enterprise management system, but also an important direction to further improve the level of

management and operation in the construction of new power systems. Under the background of modern enterprise management system construction, power grid enterprises will further clear the division of institutional responsibility interface, straighten out the business management relationship, adapt to the rapidly changing situation, improve the flexibility, coordination and accuracy of management, optimize the allocation of resources, and deepen the quality and efficiency.

First, the combination of clear responsibilities and flexibility will promote the continuous improvement of the professional level of management organizations. With a relatively flat organizational structure, clear and clear interface of power and responsibility, and unimpeded process operation, to achieve a rapid, timely and effective response to external environmental requirements such as power system reform, new energy system construction (such as national policy requirements, energy and power industry development demands, etc.), as well as its own development demands such as the construction of a diversified and integrated high-resilience power grid and market-oriented development. Continuously improve the development efficiency of power grid enterprises as well as the ability and level of active awareness of change, response and change.

Second, the combination of modern enterprise system and digital means promotes the continuous development of internal management and business processes in the direction of lean. Lean management concepts are introduced, standardized processes are implemented, waste in operations is reduced, and resource utilization is improved. In particular, through the application of digital means, data-driven decision-making and management have been achieved to ensure the stability and reliability of power supply. For example, the adoption of big data analysis and intelligent management systems has greatly improved the utilization rate and maintenance efficiency of equipment, ensuring the efficient operation of the power supply chain.

Third, the system features of internal and external coordination, pushing the collaborative management of power grid enterprises to a new level. By strengthening collaboration between departments and with external partners and customers, grid enterprises can maximize their overall benefits. Similar to the collaborative management mechanism established by the world's leading power grid companies, through information sharing and close cooperation, optimize the allocation of internal resources and improve market responsiveness. For example, some leading companies have secured a favorable position in market competition by deeply cooperating with upstream and downstream partners to ensure efficient operation and overall stability of the power system.

2 Full Cycle Management Process of Infrastructure Construction Project

2.1 Promote the "Feasibility Research-Design Integration" Bidding

On the one hand, the service fee of the winning service provider of the integrated bidding may rise; On the other hand, integrated bidding will shorten the bidding cy-

cle, the preliminary design quality is better, the construction time is more abundant, and then improve the quality of the project, bringing direct and indirect benefits. Professional management departments can select different types of typical projects for scientific data analysis and benefit evaluation; At the same time, pay attention to the compliance risk, under the premise of compliance, fully demonstrate and pilot the promotion of integrated bidding mode.

2.2 Further Deepen the Integration of the Preliminary Project

Under the premise of maintaining the same division of responsibilities of the development planning Department/pre-phase management office and the Construction Ministry/Project Management Office at the company level, it is considered to transfer the "highly interactive" work links such as reviewing project approval supporting documents, preparing approval applications, obtaining environmental assessment and water protection approval from the research Institute to the construction branch to deepen the integration of "two pre-phases". To simplify the mutual communication links of the "two early stages" and improve the quality and efficiency of work.

2.3 Consider Setting a Comprehensive Plan

According to the research, after the comprehensive plan and other related work materials are formed, they already have considerable rigor, and it is rare to revise them at the meeting and issuance stage. At present, it takes about 2-3 weeks to countersign and confirm the circulation in the collaborative office system, and it mainly relies on the comprehensive planning post of the development and Planning Department to urge it full-time. It can be considered to set an online approval time limit for the countersigning and collaborative office system circulation confirmation, and the failure to approve by the time is regarded as "approved", so as to reduce the uncontrollable time nodes in the process and improve the overall efficiency of the process.

3 Full Cycle Management Process of Power Grid Equipment

3.1 Improve the Work Guarantee Mechanism

First, establish a cross-professional collaborative leading group for the whole life cycle of power grid equipment. The leader of the company serves as the leader of the leading group, and the responsible leader of the equipment management department serves as the deputy leader to coordinate and make decisions on related matters; The director of the equipment management department, the development and Planning Department, the material management Department, the financial assets Department, the Construction Department and the power dispatching and Control Center serve as the members of the group. Second, a working group is set up under the leading group. The working group is located in the Equipment Management Department, and the director of the equipment Management Department is the leader. The director of the

Development planning Department, the material management Department, the financial assets Department, the Construction Department and the power dispatching Control Center is the member of the group. Third, Huayun Technology formed a special team. The equipment management department organized the special team to carry out equipment data collection, analysis and push according to the needs of various professional departments, expand application scenarios, provide scientific decision-making support for the professional management department of the whole life cycle of the equipment, systematically improve the quality of the equipment and extend the life of the equipment.

3.2 Strengthen the Communication of Scene Development Demand

First, from the perspective of internal optimization of the equipment management department, we should pay attention to improving the accuracy of equipment data collection, and further improve the scientific value of subsequent data analysis and decision support. Second, from the perspective of cross-departmental collaboration in the whole cycle of equipment management, the typical scenario application development requirements and model design of the working group and specialized class should be proposed based on the needs of the department, fully communicate with the demand department for development needs and application scenarios, and fully consider the suggestions of the demand department during the demand development, so as to facilitate the subsequent deepening of application and promotion.

3.3 Promote Cross-Disciplinary Data Penetration

In the full cycle management of equipment, there are still online process breakpoints in typical scenarios such as equipment basic information management, full-process technical supervision, and equipment quality management. The physical "ID" serves as a link for cross-professional data. The data such as supervision, sampling, logistics, etc. in the material procurement link, the data such as installation and handover tests in the engineering construction link, and the inspection, maintenance, and decommissioning disposal nodes in the operation and maintenance link are not strongly associated with the physical "ID", affecting cross-professional data application and information sharing. Focusing on business coordination in five major links, including planning and design, material procurement, project construction, and decommissioning and scrapping, we will focus on basic equipment information management, whole-process technical supervision, and equipment quality management, and strengthen cross-disciplinary data integration. First, accelerate the online and structured data information before the physical "ID" is generated, such as UHV project supervision report, secondary equipment debugging report, detailed survey report, equipment defect notice and other parts of the infrastructure project documents that are not online, handover test information, equipment installation records and other unstructured document information. Second, strengthen the cross-professional data linking role of physical "ID", accelerate the establishment of material procurement

supervision, sampling inspection and other data, engineering construction link installation, handover test and other data and physical "ID" strong association.

4 Full Cycle Management Process of Business Expansion

4.1 Information Collection

Establish a management mechanism for business expansion reserve projects to achieve timely response to customer needs and pre service. For the projects with electricity demand that are not immediately implemented, they will be simultaneously included in the project reserve database, and a collaborative control mechanism for reserve projects such as "plan prefabrication database", "line transfer and transformation database", "planning and modification database", "supporting engineering database" and "comprehensive energy database" will be established. Through the form of collaborative tasks, various professional departments are encouraged to carry out demand docking, relocation, planning revision, project construction and dynamic tracking.

4.2 Plan Formulation

First, low pressure implementation of "survey and design integration" operations. The application of mobile terminal to collect site information, real-time back to the background, the application of typical power supply scheme, typical design, typical cost, standard materials, on-site collection of information, automatic generation of design drawings and bill of materials, synchronously transfer information to materials and construction professional. The second is to optimize the high-voltage survey mode to realize the auxiliary preparation of power supply schemes; Lock the search strategy according to professional and management requirements, automatically limit the access to power grid equipment resources near the user's power point, combined with the customer's installed capacity, intention to connect to the power supply time and other information, complete the pre-selection of the connection path, generate a preliminary power supply scheme; After the customer confirms the power supply plan, the supporting project construction contract is signed, and the real-time key points and work task milestones are controlled.

4.3 Project Implementation

Establish a joint review mechanism for power access lines, strengthen the docking with the territorial natural resources management department, accelerate the implementation of power-related administrative approval, dock with government departments, implement the filing system and time-limited approval system, and promote the speed up of the approval of external projects.

4.4 Customer Interaction

Information such as electricity tariff, service process, operation standard and commitment time limit should be disclosed; Push the typical design reference scheme and cost of customer power receiving project according to the application, realize the openness and transparency of market price information, and improve customer service experience and sense of gain.

5 Conclusion

This paper explores optimizing core processes in power grid enterprises through modern management theory, emphasizing the need for a world-class management system to enhance efficiency. It highlights key characteristics of modern systems, such as specialization, lean management, and synergy, with a focus on clear responsibilities, digital transformation, and collaboration.

The literature review addresses organizational design, process management, and collaboration, referencing theories like Business Process Reengineering and Lean Management.

The paper also suggests optimization strategies for digital transformation, stakeholder collaboration, and risk management, offering specific schemes for construction projects, equipment management, and industry expansion to drive sustainable development.

References

1. Kassymova, G. K., Lavrinenko, S. V., Kraynova, E. R., Gasanova, R. R., Kamenskaya, E. N., Kosov, A. V., ... & Gorelova, I. V. (2020). Modern concepts and archetypes of the management in education: psychological, social and economical aspects. Bulletin of the National Academy of Sciences of the Republic of Kazakhstan, 2(384), 194-204.
2. Korytko, T., & Piletska, S. (2022). Model of the Adaptive Management System of an Industrial Enterprise in the Conditions of Industry 4.0. Економічний вісник Донбасу.
3. Anning-Dorson, T. (2021). Organizational culture and leadership as antecedents to organizational flexibility: implications for SME competitiveness. Journal of Entrepreneurship in Emerging Economies, 13(5), 1309-1325.
4. Payaro, A. (2023). Lean Management: Things never said: Curious and little known aspects of methods and tools of the Lean philosophy. Società Editrice Esculapio.
5. Dykan, V., Pakharenko, O., Saienko, V., Skomorovskyi, A., & Neskuba, T. (2021). Evaluating the efficiency of the synergistic effect in the business network. Journal of Eastern European and Central Asian Research (JEECAR), 8(1), 51-61.
6. Sullivan, R., & McDade, S. (2018). The impact of internal collaboration on innovation performance. Journal of Business Research, 87, 1-11.