ISSN 2522-3488 Vol. 8, Issue 3: 46-54, DOI: 10.25236/IJNDES.2024.080308

Engineering Management Capability Enhancement of Provincial Industry Units: A Strategic Perspective

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Abstract: *This paper presents a comprehensive analysis of the engineering management capability enhancement of provincial industry units, focusing on the critical challenges and opportunities facing these units in the context of ongoing corporate, regulatory, and technological transformations. The study offers a strategic framework for enhancing the five core capabilities and standardizing nine key management areas, aiming to improve overall performance, professionalism, and market competitiveness.*

Keywords: *Engineering Management; Capability Enhancement; Strategic Framework*

1. Introduction

The provincial units of the State Grid Corporation play a crucial role in the enterprise's development strategy, termed "one body with four wings." These units are pivotal for ensuring high-quality growth within the electricity sector amidst heightened regulatory scrutiny and structural reforms[1]. This paper delves into the methods for and importance of boosting engineering management skills to enhance performance, professionalism, and competitiveness in the market.

The current context is characterized by several factors that have significant implications for the engineering management capabilities of provincial industry units. Firstly, the ongoing transformation of state-owned enterprises and the power sector's transition to a more market-oriented model pose significant challenges and opportunities for these units[2]. Secondly, the increasing focus on safety and environmental sustainability has heightened the need for rigorous engineering management practices. Finally, technological advancements, particularly in digital technologies, offer significant potential for enhancing these capabilities.

2. Methodology

This study uses a multi-method approach encompassing in-depth interviews with stakeholders, literature reviews, and analysis of best practices, supplemented by secondary data from industry reports and financial statements. The methodology aims to identify crucial drivers in the enhancement of engineering management capabilities across provincial units.

3. Typical Cases for Reference

3.1. Advanced practices of external units

3.1.1. Practice of the "Three Major Construction Projects" in China's Construction Project Management

(1) Construction of Large Project Department System

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The project management of the large project department emphasizes the management of "project target responsibility", but what sets the project department apart from traditional project management models is that the responsibility bearing body of the project department is different. The highlight is that the "project responsibility bearing body", as the project operation responsibility body, also bears the responsibility throughout the entire cycle from project marketing to warranty completion[3].

The large-scale project management system implemented by China Construction First Engineering Bureau offers three significant advantages over the traditional project management model: Firstly, it provides a clearer and more distinct delineation of responsibility within the large project department system. Secondly, the system ensures a more comprehensive and rational implementation of power by the large project departments. Thirdly, there is a heightened emphasis on contribution and fairness in the distribution of benefits within the large project departments.

(2) Large platform construction

The construction of a robust "big platform" is structured around three core elements: resource platform, management platform, and evaluation platform[4]. Resource platforms focus on optimal allocation of production and human resources to maximize project performance and talent utilization. Management platforms encompass technology and economic strategies, ensuring precise and effective enforcement of rules while fostering innovation. The evaluation platform provides a framework for institutional guidance, resource differentiation, and continuous improvement within the project management system.

(3) Building a Big Brand

Institutionalized in 2012 with the "Brand Revitalization" strategy, the China Construction First Engineering Bureau elevated brand development to a strategic corporate level. The implementation guide issued in 2014 outlines four critical brand dimensions - product reputation, technological innovation, talent development, and corporate culture[5]. The strategy is built upon achieving scale, maintaining performance standards, showcasing flagship projects, and ensuring business sector synergy. The approach embeds brand-building across all operational facets, promoting a culture of high standards and team excellence in every project endeavor.

3.1.2. China Energy Construction Total Quality Management

China Energy Construction Corporation conducts comprehensive quality control over the five stages of investment decision-making, construction design, project construction, project completion, and project use in the process of power construction projects, comprehensively improving the engineering quality of power construction projects[6].

One is quality management during the decision-making stage. The second is quality management during the design phase. The third is project construction quality management. The fourth is quality management during the completion stage. The fifth is quality management during the usage phase.

3.1.3. China Petroleum HSE Management System

China Petroleum mainly introduces and applies the HSE management system operation mode to improve the level of enterprise management. Including the operation mode of safety management system and the implement a safety supervision mechanism that separates management and supervision.

The safety supervision mechanism of China Petroleum implements a two-line operation guarantee system of supervision system and management system[7]. The HSE management system emphasizes a hierarchical and responsible line management responsibility, while the safety supervision system mainly bears the responsibility of on-site supervision and inspection supervision, with a focus on strengthening safety supervision of grassroots units or construction projects. Finally, an Integrated Enterprise HSE Management System Standard is founded.

4. Experience reference and inspiration

4.1. In terms of engineering management

China Construction Group's "Three Major Construction Projects" streamline project management by aligning responsibilities, rights, and rewards across its echelons to boost customer satisfaction, and enhance the brand[8]. Central to these efforts is the Large Project Department System, which introduces a clear "project goal responsibility" model. Here, project departments lead with accountability, marking

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a shift in production dynamics to empower those directly involved in projects as key decision-makers and beneficiaries.

This strategy is underpinned by a large platform, divided into resource, management, and evaluation segments, to refine project management practices and ensure continuous improvement. This platform not only assesses performance but also supports growth while eliminating weaker elements.At the core of enhancing the company's stature is building a robust brand that earns customer trust through superior project quality, reflecting in timelines, safety, costs, and innovation in services, construction methods, and digital processes. These efforts converge to form a distinct and impactful market presence.

4.2. In terms of engineering management

From studying enterprises like China Construction and China Energy Engineering Corporation, it is evident that these companies have developed robust safety and engineering management systems through years of experience[9]. This encompasses system formulation, management practices, assessments, and training, offering valuable lessons for other construction firms.

Firstly, these corporations construct an integrated management system tailored to their business needs, ensuring continuous enhancement in line with actual enterprise management. Such systems significantly boost management efficiency, reduce costs, and increase market competitiveness.Secondly, construction firms need to establish a tailored management system that reflects their industry realities and supports both scientific rigor and flexibility, enabling them to keep pace with industry evolution.Thirdly, alongside comprehensive management systems, these enterprises implement thorough assessment and evaluation frameworks. These not only uphold the management standards but also advance management efficiency and competitive edge.

4.3. HSE Health, Safety and Environmental Protection Management

Emphasizing the pivotal role of the safety management department is crucial. It should have authority to oversee and assess all relevant units and departments, ensuring it fully executes its supervisory role.Construction companies can improve safety by adopting an external HSE (Health, Safety, and Environment) management system model, and implementing it across the organization through related departments to elevate safety standards[10]. Linking management personnel directly with safety responsibilities is essential, ensuring that leaders prioritize safety management.

However, relying only on the company's safety management department for systematic management is insufficient. Effective safety management requires comprehensive systems, strict supervision, clear responsibilities, and thorough safety training. Integrating safety management into the company's core values and culture is vital, fostering full employee participation and achieving a truly comprehensive safety management system without any gaps.

4.4. Construction Enterprise Engineering Capability System Construction

Integrating production and safety management focuses on two main aspects: safety culture and risk management. Emphasizing a strong safety culture is essential for effective risk handling. Aligning safety culture and risk management with company operations boosts overall safety. Key is establishing specific safety regulations and a reactive feedback system. Regular updates of these regulations based on feedback strengthen safety awareness and integrate it into corporate values, enhancing the safety culture[11]. This proactive stance not only minimizes accidents but also links safety performance to employee evaluations. Furthermore, improving risk classification and addressing potential risks proactively are crucial. Creating a dynamic risk database for facilities aids in efficient risk management. Extending hazard analysis to all production stages ensures comprehensive risk identification and management. Effective risk management involves clear roles, precise actions, budget allocation, set deadlines, and contingency planning. A rigorous, monitored system for major hazards is critical, ensuring protocol compliance, incident prevention, and sustained safety standards.

5. Diagnostic analysis of engineering capacity of province-controlled industries

According to the index system of functional capacity of province-managed industries, 19 province-managed industrial units such as Gansu Keyuan, Lanzhou Yinaneng, Baiyin Yinzhu, Tianchen Industry, etc. carry out research, inspection and other comprehensive evaluations in accordance with the way of

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"comprehensive comprehensive evaluation + spot check of key projects". For the "five capabilities", "nine areas" management behavior 13 level indicators, carry out in-depth analysis, put forward rationalization proposals, and urge the implementation of rectification.

5.1. Overall Evaluation

5.1.1. Score situation

Among the 19 companies, the overall score averaged 85.1%, with 17 companies scoring more than 80 points, accounting for 89.5%, and 2 companies scoring less than 80 points, accounting for 10.5%. See the chart below for details.

Among them, among the 14 companies that carried out the evaluation of full-volume indicators (98 items), the average score was 84.3, with a scoring rate of 84.3%; the companies with the highest scoring rate were Lanzhou Yinergy (89.4%), Baiyin Yinzhu (88.6%) and Qingyang Hongneng (86.1%), and the companies with the lowest scoring rate were Jiangnan Huayuan (78.6%) and Linxia Bozhi (77.1%).

Of the five enterprises that carried out evaluation of some indicators, the average score rate was 87.4%, with the highest score rate being Lanzhou Xinyuan Branch (20 items inspected, score rate 97.5%) and the lowest score rate being Jiayuguan Xingda (85 items inspected, score rate 80.5%).

5.1.2. Problems

A total of 399 problems were found in 19 enterprises, with an average of 21 problems in the enterprises. From the enterprises, the most problems are: 34 items of Jiangnan Huayuan (8.5%), 28 items of Tianshui Tianchen (7%), 28 items of Linxia Bozhi (7%); the least problems are: 15 items of Lanzhou Yinerang Lanzhou (3.8%), 12 items of Electricity Research Institute Longneng (3%), 3 items of Xinyuan Branch (0.8%). From the type of view, the most problematic are: talent team 59 (14.8%), engineering data 50 (12.5%), contract management 43 (10.8%); the least problematic are: safety "double access" and work site personnel uniforms are not 0.

The total number of key issues is 63. From the enterprise point of view, the most problematic are: Jiangnan Huayuan 7, Jiuquan Xingda 6, Zhangye Jinyuan, Wuwei Electric Construction, Jinchang Jinxing are 5.

5.2. Indicator scores and problem analysis

According to the "five competencies" and "nine areas" of management behavior, analyze the indicator scores of each enterprise, and carry out problem sorting and cause analysis based on the fishbone diagram.

5.2.1. Qualification Capability

(1) Indicator Score

This indicator is scored out of 8.5 points, with an average score of 7.1. Lanzhou Yinergy, Jiangnan Huayuan, and Keyuan Power all achieved the full score. Specifically, Lanzhou Yinergy and Keyuan Power proactively monitored reforms by the Ministry of Housing and Construction, set targets for qualification upgrades in response to new terms, and integrated these plans into their evaluation systems. They are now actively pursuing higher-level qualifications based on their existing statuses.

(2) Problem diagnosis and analysis

Firstly, Baiyin Yinzhu, Dingxi Haoyuan, Linxia Bozhi, Pingliang Dongfang, Tianshui Tianchen, Zhangye Jinyuan Company maintains insufficient number of personnel with enterprise qualification level certificates, and there exists the behavior of professional and technical and skilled personnel hanging up certificates and renting certificates. Secondly, the existing design qualification level of the provincial management of industrial units is generally low, mostly for the electric power industry (power transmission, substation) professional C-level qualification, narrow scope of contracting, business carrying capacity is insufficient, the qualification of the work of the target is not clear, the responsibility is not in place. Third, unlicensed or beyond the scope of the license to engage in licensed business activities, leasing and lending licenses, collusive bidding, personnel affiliation and other irregularities are common. Fourthly, the number of professional, technical and skilled personnel to maintain qualification level certificates is seriously lacking, and insufficient attention has been paid to the credit supervision of electric power business qualification licenses carried out by the National Energy Administration on a regular basis, and the pressure to undertake business is increasing dramatically under

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the environment of market-oriented access with compliance.

5.2.2. Talent team capacity

(1) Indicator Score

This indicator scores 13 points, with an average of 10.7 points, of which the higher scores are 12.4 points for Qingyang Hongneng, 12.2 points for Baiyin Yinzhu, and 12.1 points for Lanzhou Yinaneng.

(2) Problem diagnosis and analysis

First, there is unclear strategic talent positioning within provincial industrial units. These organizations lack a deep understanding of the needs concerning talent management, business development, and capacity enhancement. Second, there's a noticeable personnel shortage structurally. County companies and project departments, like Linxia Bozhi Company, face a deficit in technical and design staff, evidencing understaffing issues especially in crucial technical roles. Third, mismatched certification among personnel is prevalent. Issues like improper management of training, certification, and record-keeping are common. For example, Bozhi employs 25 special operation certificate holders yet lacks proper roles and methods for managing these certifications, resulting in cases where project managers at key positions operate without the necessary certificates. Fourth, training sessions are inadequate, often irrelevant or merely formalistic. Many units lack updated training programs and materials, with no reports on the assessment of operational teams or subcontractors' capabilities. Fifth, the incentive mechanisms are flawed. Several units have unenforced reward systems for important professional certifications, with persistent neglect in the implementation of training for emerging business areas, reflecting ongoing issues in talent development.

5.2.3. Machine and equipment capacity

First, some units of machine tools and equipment management methods are not perfect, and some units are missing online equipment rental details. Secondly, the management of machinery and equipment needs to be improved, and some enterprises are missing the records of machinery and equipment reporting and periodic inspection. Thirdly, the management of accounts needs to be improved. Some enterprises' accounts are in the county company branches, and the head office has not set up an equipment account; the equipment account is not updated in a timely manner, and does not correspond to the orders in the purchasing area.

5.2.4. Support and Protection Capability

(1) Indicator score

This indicator scores 9 points out of 9, with an average of 7.6 points, of which the higher scores are 9 points for Liu Dianlianye, 8.5 points for Dingxi Haoyuan, 8.1 points for Wuwei Dianjian, and 8.1 points for Jinchang Jinxing.

(2) Problem diagnosis and analysis

First, certain project departments lack full staffing, especially in design and materials at some county branches. Second, some emergency management units do not keep their information updated. Third, high subcontracting rates in companies detract from internal capacity; for instance, Lanzhou Yinaneng had 80% of labor subcontracted in 2022, while Zhangye Jinyuan exceeded 90%. Fourth, several firms have not established specific construction standards categorized by the type of project and operation level. Fifth, various units are missing essential documents such as strategic plans for new business sectors like operation and maintenance, asset upkeep, and new technologies.

5.2.5. Safety Control Capability

(1) Indicator Score

This indicator scores 9.5 points, with an average of 8.7 points, of which 9 units, including Lanzhou Yinergy, Baiyin Yinzhu, Zhangye Jinyuan, Wuwei Dianjian, Jinchang Jinxing, Jiuquan Xingda, Tianshui Tianchen, Chengxin Transmission and Transformation, and Keyuan Electric Power, are all scored 9.5 points.

(2) Problem diagnosis and analysis

First, some units of hazardous chemical safety risks and hazards investigation mechanism is not sound, no risk assessment work. No supporting materials for the establishment of major anti-accident measures and major anti-accident emergency response measures. Secondly, flexible team construction, some

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companies have not seen the plan of flexible safety team formation, and have not seen the formation of flexible safety inspection team. Third, some units (such as Haoyuan Company) did not build standardized safety equipment room, the purchase and distribution of safety protective equipment, tools, etc. can not be timely recovery test registration and accounting. Fourth, the safety equipment account is not perfect, part of the safety equipment without the original management account. Fifth, part of the unit on-site supervision and clocking personnel on-site personnel status, safety equipment, construction data, construction behavior supervision and supervision is not detailed, not serious.

5.2.6. Safety "double access" management

(1) Indicator score

This indicator scores 6 points, the average score is 6 points, all units are 6 points.

(2) Problem diagnosis and analysis

First, it is recommended to strictly implement the access process of "online application by subcontractors, access approval by industrial units, audit by organizers, and filing by Nethub". Secondly, it is recommended to strictly implement the list of alternative suppliers issued by Netnew Company through public bidding, strengthen the safety assessment of work teams and access credibility audit, and strictly manage the safety access test and real-name system for work personnel. Thirdly, we will do a good job of dynamically updating the information of the admitted teams and personnel in each relevant information system in a timely manner, so as to eliminate the phenomena of discrepancies in personnel certificates, incomplete information, lagging data or errors.

5.2.7. Material Procurement Management

(1) Indicator score

This indicator is full of 5 points, with an average score of 4.1 points, of which Baiyin Yinzhu, Zhangye Jinyuan, Wuwei Dianjian, Jinchang Jinxing and Jiuquan Xingda are all 5 points.

(2) Problem diagnosis and analysis

First, some materials management is not standardized. For example, there are problems such as warehousing without acceptance, mismatch between the winning date of engineering materials procurement and the construction period, and the application time of fixed assets scrapping approval form is later than the approval time. Secondly, the management mechanism of balance materials in some units is not perfect and the implementation is not in place. Some units did not see supporting materials such as balance material management system, measures, programs, etc., and lacked details of balance materials after the completion of the project. Third, some units' data governance was not standardized. Some units have not formulated material data governance programs and are missing supporting materials for carrying out one-code and one-source governance. Some units have carried out data governance, but the progress of governance is inconsistent with the implementation program. Fourth, some units did not see monthly evaluation feedback records and quarterly notification assessment records. Fifth, some units have not seen supporting materials such as the 2022 procurement list (including online and offline) and the procurement records of the "net new preferred" e-commerce trading zone.

5.2.8. Project Contracting Management

(1) Indicator score

This indicator scores 7 points, with an average of 5.7 points, of which Liu Dianlianye, Pingliang Dongfang Electric Power, Tianshui Tianchen, Gannan Shenglong and Linxia Bozhi score 6.4 points.

(2) Problem diagnosis and analysis

First, some units are not in strict accordance with the project contracting management regulations, the contracted power project subcontracting and illegal subcontracting. Secondly, the online mode of project contracting needs to be improved, and some units have not seen the "net new preferred" e-commerce trading zone with agricultural network and customer project contracting records. Third, some of the project contracting management is not standardized, such as the project completion acceptance report acceptance column did not fill in the date, responding to the document seal inspection report did not sign the date. Fourthly, some units have not seen the records of contracting compliance checking and correction in the past three years and materials related to the results of checking and correction and rectification.

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5.2.9. Contract Management

(1) Indicator score

This indicator scores 7 points, with an average of 5.7 points, including 6.8 points for Lanzhou Xinyuan Branch, 6.5 points for Lanzhou Yinergy, Liu Dianlianye and Gannan Shenglong.

(2) Problem diagnosis and analysis

First, there's lax enforcement of some contracts posing business risks, such as contracts being signed later than 30 days after award notification. Second, full lifecycle risk control—from pre-contract to post-execution—is lacking in some cases. There's no effective mechanism for preventing contract risks, nor a system for organizing all relevant data per construction data management protocols. Instances include missing dates on contract covers and signatures, or absence of the general manager's signature. Third, the contract management of some units deviates from standards; certain contracts lack rigorous checks on the counterparty's qualifications, and the basis for concluding contracts is unstandardized, introducing risks during drafting and review phases.

5.2.10. Engineering Data Management

(1) Indicator score

The full score of this indicator is 5.5 points, and the average score is 3.5 points, among which Lanzhou Xinyuan Branch scores 5.3 points, Baiyin Yinzhu scores 5.1 points, and Dingxi Haoyuan scores 5 points.

(2) Problem diagnosis and analysis

First, many construction process records are non-standard and incomplete—including missing logs and essential documentation such as "three measures and one case." Often the launching and completion reports are incomplete, lacking imagery data or formal opening work reports. Supervision logs and work ticket content also show mismatches, with supervision data preparation being non-standard. Secondly, there is a deficiency in information standardization. Critical documents like supervision logs, work tickets, and hidden project acceptance records are incomplete, and personnel listed on work tickets often differ from those in construction logs. Thirdly, standard systems for managing projects in infrastructure, distribution, agricultural network engineering, and customer services have yet to be established.

5.2.11. Project Accounting Management

(1) Indicator score

This indicator scores 5 points out of 5, with an average of 4.1 points, of which Baiyin Yinzhu, Zhangye Jinyuan, Wuwei Dianjian, Jinchang Jinxing, Jiuquan Xingda are all 5 points.

(2) Problem diagnosis and analysis

First, the management of documents or supporting materials related to the industry and financial synergy mechanism is not standardized, and it fails to carry out the whole process and elemental control. Individual units of the same subcontracting unit for the same position are inconsistent with the unit price per person-day, and the unit price per person-day for different subcontracting units of the same project is also inconsistent. Second, in the accounting of labor subcontracting costs, individual units directly pay labor fees to subcontracting units, and then subcontracting units paid to migrant workers, without supervision and management of the evaluation of migrant workers' wages payment.

5.2.12. Work clothes of personnel at the operation sitengineering Data Management

(1) Indicator score

This indicator has a full score of 3 points, and the average score is 3 points for all enterprises.

(2) Problem diagnosis and analysis

Provincially-controlled industrial units are advised to standardize uniforms for both their own personnel and those of outsourced teams. Uniforms for employees in province-controlled industries (including borrowed workers, collective workers, directly signed employees, and long-term dispatched workers) should generally match the main industry's color scheme. Those already using similar uniforms can continue, but must not display the State Power Grid brand logo.Uniforms for labor subcontracting team personnel need to meet three key criteria: adherence to the provincial company’s safety equipment regulations, uniformity within the industrial unit, and clear differentiation from the main industry and the unit's own staff uniforms. This standardization is essential for maintaining a cohesive and professional

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appearance across all levels of operation.

5.2.13. Behavior of engineering contracting outside the system engineering Data Management

(1) Indicator score

The full score of this indicator is 7.5 points, and the average score is 6.6 points, of which Zhangye Jinyuan is 7.5 points, Jinchang Jinxing and Jiuquan Xingda are all 7 points.

(2) Problem diagnosis and analysis

First, individual units did not strictly implement the customer power project "three designated" governance requirements, there are designated customer power project design unit and construction unit. Secondly, "one-stop" professional services need to be improved, including proactively providing customers with pre-consultation, professional construction, power supply acceptance, warranty extension, professional maintenance, etc., and signing contracts and performing in compliance.

5.2.14. Management of Private Enterprise Accounts and Migrant Workers' Wage Payments

(1) Indicator score

This indicator has a full score of 8 points, with an average score of 7 points, of which enterprises such as Baiyin Yinzhu, Qingyang Hongneng, Zhangye Jinyuan, Pingliang Dongfang Electric Power and Keyuan Electric Power all have a score of 8 points.

(2) Problem diagnosis and analysis

First, there are individual enterprises with unsound coordination mechanism for the payment of migrant workers' wages and preventive mechanism for wage arrears. Secondly, there is the legal compliance risk of failing to strictly implement the real-name system for labor employment management, and the legal compliance risk of failing to supervise subcontracting units due to subcontracting and illegal subcontracting. Third, some enterprises have not set up public opinion management mechanisms and management methods, public opinion risk warning and response mechanisms, and mechanisms for reporting letters and visits.

6. Key Findings and Recommendations

The study highlights crucial insights and recommendations to boost the engineering management skills of provincial industry units.

The strategy for improving engineering management highlights strengthening five key capabilities: building enterprise qualifications, enhancing the talent team, upgrading machinery and equipment, establishing a solid support system, and enforcing rigorous safety control measures. Continuous reinforcement of qualifications, robust recruitment and training mechanisms for talent, technological updates for equipment, and comprehensive supports are essential for project success and safety standards. Additionally, standardizing practices across nine domains including safety protocols, procurement, and financial management is crucial to elevating professionalism and consistency in engineering management. Digitization is identified as a pivotal strategy, with IT solutions enhancing project oversight and management efficiency, thus keeping firms agile in a competitive market. Finally, creating a broad engineering management system that covers project, quality, and safety management ensures smooth project execution and fosters ongoing improvements. Collaboration and adoption of innovative management strategies are also encouraged to continuously enhance management proficiency.

7. Conclusions and Future Development Outlook

7.1. Conclusion of the study

As the power system reform deepens and as we transition towards a new type of power system, provincially controlled industrial sectors are compelled to evolve from a growth model reliant on merely expanding scale to one that emphasizes enhancing quality and efficiency. This shift is critical for the sustainable and healthy development of these industries. Amidst this transformation, the pressures of maintaining operational stability, achieving sustainable economic gains, and meeting the State-owned Assets Supervision and Administration Commission (SASAC)'s mandates to amplify quality and efficiency are monumental. To address these challenges and capitalize on the emerging opportunities, the

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implementation of a project termed "party building + engineering management capacity enhancement" has been enacted as a pivotal strategy. This initiative aims at fortifying five primary capabilities: enterprise qualification, talent, equipment, support and protection, and safety control. Moreover, it focuses on the rigorous standardization of nine critical management areas: safety protocols (dual access), material procurement, project contracting, contracts, project documentation, financial management, uniformity of work site personnel, external contracting behaviors, private accounts handling, and payment of migrant workers' wages.

The enhancement in these domains is designed not only to bolster safe production and construction management skills but also to aid in the revamping of the modern corporate governance structure. This restructuring aims to tighten control over various types of production operations and infrastructure construction management, boost professional qualification capacities, broaden service scopes, and elevate the levels of scale, standardization, and specialization within these industrial units. By focusing on improving these specific areas, provincial industrial units can provide more robust professional support. This will enable them to sustain their competitiveness and adaptability in an evolving market landscape, ensuring they not only meet but exceed the requirements set forth by SASAC, thereby securing the ongoing prosperity of the province-controlled industry.

7.2. Future Development Outlook

(1) Electricity investment tilted to the distribution network, promoting the development of power survey and design industry on the distribution network side.

(2) The rapid development of new energy brings new growth points for the electric power engineering technical service industry.

(3) Comprehensive energy services have become a new opportunity for the power engineering technical services industry.

(4) The advantages of power engineering general contracting model highlights the industry's huge space for development.

(5) Smart grid puts forward new requirements for operation and maintenance, and the development trend of intelligent operation and maintenance is clear.

(6) Digitalization, robotics and other technologies are widely used in the field of engineering.

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