Structured Standardization Method for Intelligent Review of Material Procurement Plan

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Abstract. At present, a large number of power companies use ERP systems to fine-tune enterprises, and the application of information systems has effectively improved the standardization and standardization of enterprise management, which is conducive to the overall advantages of enterprises. In the management of material procurement planning, material procurement planning review is a complex and important task. Each batch needs to be reviewed on a case-by-case basis according to the requirements of the State Grid Corporation and the Provincial company. The material information is complex and complex, for example. Material, delivery method, delivery time, budget estimate, technical specification status, project name, the material code ID, where planned quantity, curing ID, technical specification time, plan, etc. This paper conducts a detailed study and review of the current status of procurement planning review. On this basis, it proposes a structured and standardized method for intelligent review of material procurement planning. Through the refinement of structural review points and review rules, the whole process of material procurement planning review is online. The Management and the key points automatic review technology, seamless docking, sharing procurement plan declaration data, Enabling experts to shift from repetitive mechanical labor to focus on reviewing key parts and enabling turning manual work into machine work. Avoiding data crossover and auditing data. It is not easy to manage, and It is little the timeliness, Accuracy and standardization of procurement planning from multiple dimensions such as audit efficiency, audit quality and audit data management.

Introduction

Under the current situation, the power grid has entered the development stage of high voltage, long distance and large capacity, and the requirements of the power grid construction on the material quality and procurement speed have also been constantly improved. The construction of "three sets and five major systems" by state grid corporation of China (SGC) means higher requirements for the intensification of power grid enterprises. With the large-scale investment of the state power grid in recent years, most of the key types of products in the power grid material and equipment market have been in the seller's market, the difficulty of material supply has increased, and strengthening the level of intensive material management is an inevitable requirement for the marketization development of power grid enterprises.

At present, a large part of electric power enterprises uses ERP system for fine management of enterprises. The application of information system effectively improves the standardization and standardization level of enterprise management, which is conducive to the full play of the overall advantages of enterprises. Due to the current management of electric power enterprise supplies, supplies plan source has the characteristics of diversity and complexity, the use of ERP information system as a technical support, is more advantageous to implement the procurement plan management of universal coverage, ensure the timely and accurate materials supply, adapted to the management and development of enterprises, to promote a healthy and sustainable development of the enterprise[^1].
In material purchasing plan management, material purchasing plan review is a complicated and important work, each batch must be in accordance with the requirements of the state grid corporation and provincial company detailed case-by-case basis to review, and materials information and more complicated, such as material, delivery mode, delivery time, budget, technical specification book status, project name, material code ID, plan, cure ID number, technical specification book time, planning, etc. In addition to the need to ensure that these contents do not repeat, but also to determine the basic information of other information, such as the correctness, rationality, normality of the purchase batch, and even including the matching of technical parameters have to be reviewed, the difficulty can be imagined. And the review of the quality of the follow-up procurement, contract signing and settlement and other links have a great impact. In particular, the accuracy rate of the batch plan review directly organized and implemented by state grid will directly affect the target indicators of provincial companies, which also leads to great pressure and intensity of the staff of relevant review work. Therefore, it is necessary to carry out the research on the intelligent review technology of material purchase plan, so as to automatically review the purchase plan, so that people can be liberated from repetitive mechanical labor, and greatly improve the efficiency and accuracy of the review of purchase plan.

This paper will carry out a detailed investigation and review of the status quo of procurement plan review, and on this basis, it will propose a structured and standardized method of intelligent review of material procurement plan, and based on this method, conduct intelligent review and result analysis of more than 1000 material procurement plans. The structure of the article is as follows. Chapter 1 describes the current situation of the review of procurement plan, expounds from the aspects of material procurement management, rule engine technology and workflow engine technology, analyzes the deficiencies of the current system, and proves the necessity of the structured standardization method of intelligent review of material procurement plan. Chapter 2 shows the theoretical basis and specific contents of the method, and explains the thought and process of the method more carefully. Chapter 3 demonstrates the feasibility and practicability of the method through concrete examples. Chapter 4 simply states the advantages and benefits of structured and standardized methods. Chapter 5 summarizes the overall content of the article in a short language, and gives a conclusion on the current era of this intelligent review method.

**Review the Status of Purchasing Plan**

**Practical Basis for Material Purchase Plan Review**

At present, the power grid company adopts the three-level plan approval mechanism: for batch purchase plans, the demand unit, the material supply center and the material supply enterprise shall have three levels of approval, and the "three up and three down" plan control mode shall be implemented. The first level for examination and approval, the key audit application material whether accuracy, non-standard material rationality, technical specifications, delivery time, quantity, and evaluate the information such as unit price, and a preliminary judgment purchase way (mainly includes the agreement on the mode of procurement procurement, inquiry of inventory, bidding and purchasing, supermarkets procurement and single source procurement, competitive negotiation, etc.), organizational project management department, technology department in charge of the unit and design unit review the tender specification. Secondary examination and approval in addition to reviewing the above information, professional competent departments are also organized to focus on the project compliance, material accuracy, technical specification rationality review. The review committee of the three-level examination and approval organization shall solve the problems in the preliminary examination and finally determine the accuracy of the plan and upload it.

The existing material plan review mode focuses on routine audit, centralized review and statistical analysis. Daily audit is a preliminary audit of the reported demand plan in the process of submitting the demand plan by the municipal companies; Centralized examination is to organize experts to conduct centralized examination of the demand plan and technical specification
submitted by this batch; Statistical analysis refers to the statistics, classification and analysis of the problems in this batch after the examination.

**Research Status of Material Purchase Management**

In recent years, many domestic scholars and experts have carried out theoretical and applied research on intensive material management and material procurement management. Wang Haiqiang and Liu Weimin elaborated seven key works of intensive management, analyzed existing problems and proposed improvement measures. Sun Linan firstly introduced the special requirements of JIT purchasing mode on supplier capability, then introduced how to select supplier model, and finally proposed relevant selection strategy[2]. CAI Pei and wang Rui analyzed the advantages and problems of Just In Time (JIT) procurement mode over the traditional mode, and provided references for enterprises to choose procurement mode[3]. Qiu sheng explored the method of establishing JIT purchase mode and constructed a supplier management system that met the management requirements of JIT purchase mode[4]. Zhou Xiaomei developed jit-based purchasing management system for power enterprises based on the idea of multi-layer architecture and javabeans (Enterprise javabeans, EJB) components, using object-oriented J2EE application design[5]. Gu Haihong focused on the implementation objects, differences and common characteristics of fast response and effective customer response under the relevant circumstances of fast response and effective customer response[6]. Wu Juan discussed the factors affecting the supplier's ability to respond quickly and established the relevant evaluation model and indicators[7]. She introduced the Vendor Managed Inventory (VMI) model for the thermal power plant and the supplier selection model based on ahp-topsis[8]. Zhang Ge discusses the implementation conditions of VMI[9].

As for the demand forecast of power supplies, the current research has not been in-depth, and the main focus of the current research is the demand forecast of stock supplies. Sun Huaifu first introduced the storage theory, and then established the relevant model of storage theory. At the same time, he made use of the storage theory to make prediction, and improved the prediction results, and obtained a good prediction effect[10]. On the background of material procurement in datang toketo power plant, on the basis of analyzing the particularity of power materials, wang zhiyong proposed a combined forecasting model of grey forecasting and trend forecasting, and carried out material demand forecasting by means of subjective weighting, which improved the benefit and efficiency of material procurement[11].

**Theoretical Basis and Content of Methods**

In this paper, the center of the intelligent examination method of the procurement plan for according to the material types, material, small goods, material code in different materials, such as category, as well as the agreement procurement, inquiry of inventory, bidding and purchasing, supermarkets procurement and single source procurement, competitive negotiation purchase mode, to describe + material purchasing mode as the basic unit, based on historical bidding data, according to different categories, different levels of material of the project name, selection of material, the delivery date, unit price, review points are structured and standardized processing, forming standardized examination points library material purchasing plan, A systematic, structured and standardized processing method was established to match the material description with the main points.

**Principle Brief of Method Contents**

**Brief Introduction to the Research Principle of Intelligent Review of Material Purchase Plan.** Purchasing plan intelligence review refers to the purchasing plan and review of historical data as the basis, according to different types, different levels of materials, refined structured, key points of standardized examination and rules, and will review the logic into a computer to recognize the language, using auxiliary tools, seamless docking, share, purchase plan, according to the data of purchasing plan review whole process management and online automatic review key points, the
efficiency and accuracy, and further enhance the purchasing plan review for subsequent material purchasing. The basic principle of research on intelligent control technology of material purchase plan mentioned in this paper is shown in Fig. (1).

![Smart review of Procurement plan](image)

**Material Procurement Planning Process.** The material purchase plan includes batch purchase plan, agreement stock purchase plan, supermarket purchase plan and out of batch purchase plan. The batch procurement plan is the material or service procurement plan prepared by the demand unit (department) according to the project construction schedule or production and operation situation, combined with the annual demand plan. The contents of the preparation of the batch procurement plan include demand unit, project name, project type, project voltage level, material code, delivery place and method, demand quantity, estimated unit price and total price, delivery date and technical specification. Generally, the batch procurement plan includes the application process of "direct organization and implementation by headquarters" and the application process of "unified organization and monitoring by headquarters and specific implementation by provincial companies".

**Specific Contents of Intelligent Review Method of Material Purchase Plan.** According to the previous introduction, this paper provides a structured and standardized method for intelligent review of purchasing plans. The intelligent review method of the material purchase plan is firstly based on two main review points, namely material description and procurement pattern. Material description can be divided into material category, material category, material subcategory, material code and other accurate definitions and concepts of material nature categories. The procurement mode includes several different procurement methods, such as agreement inventory, bidding procurement, supermarket procurement, inquiry procurement, single-source procurement and competitive negotiation. To describe + material purchasing mode as the basic unit, based on historical bidding data, according to different categories, different levels of material refining structured, standardized review key points (such as project name, material selection, delivery, price, etc.), the formation of standardized examination points libraries, and establish the material description and review key points matching table.

Then set up the review rules. For the attributes and characteristics of structural review points, set the specified review rules (such as whether there are key elements, whether it is qualified or unqualified within the specified scope), and apply programming language to transform the review rules into computer programs. According to the key points such as the batch range and delivery date of the project items, and combining with historical data and project characteristics, formulate strategic correlation table, and judge that the materials belong to primary/secondary procurement according to the engineering characteristics; According to the delivery date, judge the time accuracy of the batch of materials. Part of the review rules are shown in Fig. (2).
Finally, the management of the whole process of purchasing plan review and the automatic screening of key points are realized. Develop intelligent review auxiliary tools for ERP procurement plans, seamlessly connect and share procurement plan declaration data in ERP, realize the functions of rapid project creation in the plan review meeting, online expert review and review of plan items, one-click rejection of problem plans, and ensure the online review of the whole process of procurement plans. In addition, the key review points and review rules are informatization deployed to realize the automatic screening of key points of the procurement plan, reduce a large number of manual repetitive mechanical work in the review work, reduce the workload of manual comparison, further improve the review efficiency and ensure the compliance of the procurement plan. At the same time, according to the actual audit situation, support the review points and rules dynamic maintenance, in order to deal with the possible changes in the future. In terms of the display of results, the procurement plan processed by the above process shall be marked and prompted with qualified or error information.

**Advantages of Structured and Standardized Methods**

Purchasing plan intelligence review of structured the advantage of standardized method basically has the following several aspects: because supplies intensive management involves many units and departments, management chain length, link, between the procurement and other business departments, of all the responsibility, the purchasing department hierarchy management function easily confused, resulting in the procurement aspects, especially in the area of material purchasing plan of mutual shuffle, management confusion. Research and application of this method, make purchasing plan review work on various management processes of clear, transparent working process, various departments more clear their respective material purchasing plan in the global situation, avoid repeat purchase, illegal acquisition, over purchasing and procurement procedures not compliance, procurement plan is not reasonable, and so on and so forth.

This method for participating in the procurement plan review experts and management personnel to provide an accurate, easy to operate, information platform, making the original heavy and complicated time consuming manual review way statistical work history, put an end to the concentration of because review arrangement is not rigorous, accuracy is poorer and the serious influence purchasing schedule, and the disadvantages of passive follow-up work. In the review process of material procurement plan, the review of technical specifications by experts of each review team can be transferred from offline to online, and all relevant data can be retained in the system, which improves the effectiveness of statistical work. By recording the relevant data of the whole process of the review of material purchase plan, the information generated in the review process can be managed in a timely manner, providing data guarantee for the follow-up tracking, query and statistics. By accumulating a large amount of valuable data in the long-term use, the company's management personnel can analyze these data and analyze the procurement demand plan.
in the whole process of material procurement plan review and the implementation of the subsequent procurement plan, which is conducive to finding their own problems. Professional assessment is one of the important means used in current management. How to ensure the accuracy and fairness of assessment data of plan quality is also one of the business problems of material plan management. The whole process management system for the review of intelligent material purchase plan emphasizes the process management and information management of the review and management of the purchase plan, defines the scope of authority and responsibility for the review of standardized material purchase plan, and clearly divides the authority of the four types of customers: administrators, team leaders, experts and project managers. Through the recording and analysis of the information and data in the plan audit process, the gap in business capability among project units, design units and experts can be accurately monitored, providing data support for business assessment at different levels.

Conclusion

In the era of rapid development of the Internet, the power grid is following the trend of The Times and heading for the Internet office. And the material purchase plan review and Internet office together is an inevitable trend.

In this paper, the intelligent material purchasing plan review of structured standardization method is in the study of material types, material, supplies, small, different materials such as material coding categories, as well as the procurement of inventory, bidding and purchasing, supermarkets, inquiry procurement, single source procurement, competitive negotiation, etc, on the basis of different procurement mode, to describe + material purchasing mode as the basic unit, based on historical bidding data, according to different categories, different levels of material of the project name, selection of material, the delivery date, unit price, review points are structured, standardized treatment method.

Moreover, as more and more widely used, the database generated from the historical data will be updated more and more accurately, more and more abundant, and can deal with more and more special problems. In this way, the manual work of the procurement plan review will be turned into machine work step by step, the efficiency and accuracy of the procurement plan review will be improved, and the intelligent level of the power grid company's material procurement plan management will be improved, which will become an important part of the power grid construction.

References


