



Research on Procurement Quality Management Evaluation of Tobacco Commercial Enterprises Based on the Balanced Scorecard

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Abstract. In recent years, tobacco commercial enterprises have consistently implemented high-quality development concepts, continuously improving procurement management and supervision systems. Significant enhancements in procurement management and regulatory standards have been achieved, with strengthened integrity risk prevention measures in procurement operations, providing solid safeguards for the sustainable development of the tobacco industry. However, certain operational challenges remain in procurement management practices. Enterprises need to strengthen comprehensive supervision and evaluation throughout the entire procurement process (pre-transaction, during-transaction, and post-transaction) to continuously improve procurement efficiency. Based on the Balanced Scorecard framework, this study establishes an evaluation index system for procurement quality management in tobacco commercial enterprises. Using Shandong Y City Tobacco Company as a case study, the research proposes corresponding safeguard measures for procurement quality management evaluation. The findings demonstrate that this index system effectively reflects current procurement quality management levels in tobacco commercial enterprises, showing practical applicability.

Keywords: procurement quality management; performance evaluation; BSC

1 Introduction

For decades, the tobacco industry has been a cornerstone of national fiscal revenue, making its high-quality development crucial for driving economic growth. Due to industry-specific characteristics and production complexities, tobacco enterprises face numerous bidding projects with substantial capital investments, where procurement costs account for a significant portion of total expenditures [1]. Material procurement, being both a key economic hub and a high-risk area prone to issues in corporate management, also serves as a critical control point in the tobacco industry. This sector's direct interactions with external stakeholders often trigger public scrutiny and complaints, making it a primary focus for inspections, audits, and supervisory reviews. As the industry transitions from rapid expansion to quality-driven development, higher

standards are being imposed on procurement management. Confronting these challenges, tobacco commercial enterprises have shifted their procurement management focus from plan-based control to process-oriented oversight, actively exploring strategies for quality improvement. However, evaluating procurement quality management in tobacco enterprises remains a practical challenge. Given the inherent ambiguity in assessing influencing factors, a multi-level fuzzy evaluation model can be developed. By applying fuzzy mathematics to systematically analyze these factors and quantify qualitative indicators, the effectiveness of procurement quality management can be accurately assessed.

2 Operation Status of Tobacco Industry Procurement Quality Management

2.1 Policy Level

In recent years, the competent authorities of the tobacco industry have successively issued relevant policy documents (as shown in Table 1) to standardize corporate procurement management practices, strengthen regulatory oversight of tobacco industry procurement, and facilitate the high-quality development of tobacco enterprises. These regulations aim to enhance industry rectification and standardization efforts, improve the management level of procurement standards, and ensure the transparency, fairness, and impartiality of the procurement process.

Table 1. Documents Related to Procurement Management in the Tobacco Industry

document	Procurement Management Requirements
Tobacco Enterprise Procurement Management Regulations (China Tobacco Administration Office [2012] No.313)	The procurement management scope was extended to the fields of engineering, materials and services, and the procurement office was required to be established to implement process control ^[3] .
Circular on Issuing Three Guarantee Mechanism Documents (China Tobacco Office [2016] No.1)	Promote the industry to achieve 'full recruitment', 'substantive measures', and 'deep integration of transparent management with business operations' on a standardized, institutionalized, and procedural track for sustained and healthy development ^[3] .
Notice on Issuing Several Provisions from Violating Regulations to Interfere with and Intervene (State Tobacco Office [2019] No.205)	Focus on improving the power allocation and operation restraint mechanism, prevent the occurrence of corruption in tobacco industry procurement and other areas.
Circular for Further Strengthening Procurement Management (State Tobacco Monopoly Administration Document [2020] No.105)	Adhere to the strict and standardized 'lifeline' without wavering, uphold the organic unity of standardization and efficiency, and maintain an efficient and risk-controlled procurement mechanism, with emphasis on the level and resource allocation efficiency ^[2] .

2.2 Implementation Level

Today, tobacco commercial enterprises have established a procurement model primarily based on public bidding, supplemented by competitive negotiations, price inquiries, and single-source negotiations. The procurement management system has taken shape, and the procurement process framework has been preliminarily established. However, as industry procurement management evolves from planned control to process-oriented oversight, deeper and more detailed research is needed in areas such as system implementation, process optimization, procedural standardization, risk prevention, and supervision accountability.

3 Construction of Evaluation Index System of Quality Management for Tobacco Commercial Enterprises

The Balanced Scorecard, as a comprehensive management tool, can also be applied to evaluate the quality management level of procurement in tobacco commercial enterprises. By establishing a comprehensive and systematic evaluation framework across four dimensions—financial, customer, internal processes, and learning and growth—it helps tobacco commercial enterprises ensure alignment between procurement activities and overall strategy, achieve multi-dimensional performance evaluation, enhance internal communication and collaboration, and support closed-loop strategic management. This, in turn, drives continuous improvement and enhancement of procurement quality management [6]. This paper constructs a procurement quality management evaluation index system based on the Balanced Scorecard, tailored to the characteristics of tobacco commercial enterprise procurement, as detailed below.

3.1 Design of Financial Dimension Indicators

Financial metrics serve to evaluate whether a company's goal-setting and execution contribute to profit growth. Core financial objectives typically include profitability, growth, and shareholder value. For mature enterprises like tobacco trading companies, these metrics should encompass not only procurement processes but also supplier management, cost control, and quality assurance. Therefore, when selecting financial evaluation indicators, tobacco trading companies may adopt metrics such as procurement cost control, cost savings rate, and procurement budget compliance rate.

3.2 Design of Customer Dimension Indicators

Customers primarily focus on quality, service feedback, cost, and time. Therefore, when designing customer dimension indicators, these aspects should be considered. Common customer dimension indicators include customer satisfaction, complaint resolution satisfaction rate, customer visit task completion rate, and customer churn rate [4]. Based on industry practices, this paper establishes four customer dimension indica-

tors for procurement quality management evaluation in tobacco commercial enterprises: "Supplier Satisfaction," "Internal Customer Satisfaction," "Procurement Information Transparency," and "Complaint Resolution Transparency"

3.3 Design of Internal Process Dimension Indicators

In the internal process dimension, the evaluation indicators for quality management in tobacco commercial enterprises should primarily focus on the smoothness, efficiency, compliance, and quality control of procurement activities.

3.4 Design of Learning and Growth Dimension Indicators

Li Quanxi, Sun Panstone, and Jin Fenghua (2011) conducted a study analyzing the mechanism of organizational learning innovation in quality and performance management, using 137 manufacturing enterprises in China's more developed regions including Qingdao, Yantai, Changchun, Shenzhen, and Dongguan. The results demonstrated that quality management significantly enhances organizational performance through organizational learning innovation as a mediating variable. To implement the State Tobacco Monopoly Administration's innovation policy of "industry-academia-research collaboration," the evaluation metrics for learning and growth dimensions—such as training plan execution rate, employee participation rate, job fit, and high-skilled talent proportion—were established to improve overall corporate efficiency.

4 Application of Evaluation Index System of Quality Management in Procurement of Tobacco Commercial Enterprises

4.1 Selection of Evaluation Methods

The quality evaluation index system of tobacco enterprises' purchasing management is a complex system, which involves multiple dimensions of evaluation indicators to ensure the efficiency, quality and compliance of purchasing activities. In the specific evaluation, the following evaluation methods can be adopted:

(1) Expert scoring method

The evaluation system combines self-assessment (with a 100-point base score) and third-party evaluation (expert scoring method, also 100-point base score), establishing baseline scores and assessment criteria for each indicator as shown in Table 2. During implementation, discrepancies between self-assessment and third-party evaluations should be cross-checked to identify specific causes. Additionally, cases where assessment indicators fail to meet self-evaluation standards and result in score deductions require special attention, serving as key priorities for subsequent corrective actions.

Table 2. Evaluation Index System of Quality Management in Purchasing of Tobacco Commercial Enterprises

assessment latitude	indicators for performance check	Scoring Points	Base score	Self-assessment score	Check Score
Financial dimension (25 points)	budget execution rate	1. A full score is awarded for a procurement budget execution rate of 90%; an additional (+/-) 1 point is deducted for each percentage point above (or below) the target.	8		
	budget compliance rate	If the budgeted amount is significantly higher (or lower) than the actual expenditure in previous periods, one point will be deducted for each occurrence until the budget is fully met.	6		
	procurement cost saving rate	A full score is awarded for a cost-saving deviation rate within $\pm 5\%$. For each percentage point exceeding this limit, 0.5 points are deducted until the maximum penalty is reached.	5		
	procurement cost control	If the procurement cost amount is significantly higher (or lower) than the historical actual cost, one point will be deducted for each occurrence until the total points are exhausted.	6		
Customer dimension (25 points)	Supplier satisfaction	A supplier achieves a 100% satisfaction rate to receive a perfect score, with 1 point deducted for each percentage point below, until the maximum deduction is reached.	7		
	internal customer satisfaction	Internal customer satisfaction scores 100% for a perfect score, with 1 point deducted for each percentage point below, until the maximum score is reached.	7		
	Procurement information disclosure status	For each instance of non-transparent procurement information, 0.5 points will be deducted until the maximum penalty is reached.	5		
	Complaint handling transparency	For each instance of non-transparent complaint handling, 0.5 points will be deducted until the maximum penalty is reached.	6		
Internal process dimension	decision process transparency	0.5 points will be deducted for each instance of decision-making opacity until the maximum penalty is reached.	6		
	Procurement process efficiency	A 10% reduction in procurement cycle time earns a perfect score, with 1 point deducted for each percentage point below the target until the maximum deduction is reached.	7		
	Policy compliance rate	A perfect score is awarded for achieving 100% compliance with policies and regulations. For	6		

(25 points)		every 1 percentage point below the required accuracy rate, 1 point is deducted until the maximum penalty is reached.			
	Implementation of the Accountability and Assessment System	A deduction of 1 point will be applied for each instance of inadequate institutional development or poor implementation, until the maximum allowable deduction is reached.	6		
Learning and Growth Dimension (25 points)	Employee training completion rate	Employees who complete procurement-related training receive a full score of 100%, with 1 point deducted for each percentage point below this threshold.	6		
	Employee competency enhancement	The maximum score is awarded when the assessment rate reaches 80% of the total employees. A deduction of 1 point is applied for each percentage point below this threshold until the maximum score is reached.	7		
	Application of Information System	The procurement system is rated at 100% for full score in all procurement activities. A deduction of 1 point is applied for each percentage point below the score, until the maximum score is reached.	6		
	Procurement Process Optimization and Innovation	The score is based on the optimization of the procurement process.	6		
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	budget compliance rate	If the budgeted amount is significantly higher (or lower) than the actual expenditure in previous periods, one point will be deducted for each occurrence until the budget is fully met.	6		
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	Policy compliance rate	A perfect score is awarded for achieving 100% compliance with policies and regulations. For every 1 percentage point below the required accuracy rate, 1 point is deducted until the maximum penalty is reached.	6		
	Implementation and Assessment System	A deduction of 1 point will be applied for each instance of inadequate institutional development or poor implementation, until the maximum allowable deduction is reached.	6		
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	Application of Information System	The procurement system is rated at 100% for full score in all procurement activities. A deduction of 1 point is applied for each percentage point below the score, until the maximum score is reached.	6		

(2) Fuzzy Comprehensive Evaluation Method

Fuzzy comprehensive evaluation method is a kind of method which uses fuzzy mathematics theory to deal with multi-factor decision-making problem. It transforms qualitative evaluation into quantitative evaluation by establishing evaluation index system, constructing fuzzy relation matrix, determining index weight and carrying out fuzzy synthesis calculation. It is suitable for solving problems with uncertainty and fuzziness.

(3) Front-end distance method

The frontier distance method, a Data Envelopment Analysis (DEA)-based evaluation technique, assesses the relative efficiency of decision-making units by comparing actual data with frontier data. This approach is particularly suitable for evaluating multiple companies or departments. In procurement quality management, it enables comparison of a company's (department's) performance metrics against frontier data, calculates their relative efficiency values, and facilitates comprehensive evaluation.

4.2 Specific Application of the Evaluation System

To validate the scientific rationality of the evaluation index system, a Delphi method was employed to distribute questionnaires to the management and procurement staff of Shandong Y Tobacco Co., Ltd. The overall procurement quality management situation and performance of each dimension were scored. The weight of each index was determined based on the base scores in Table 2. According to the processed fuzzy evaluation results and the principle of maximum membership [7], the grade with the highest membership in the comment set of five levels was identified as the corresponding fuzzy comprehensive evaluation result for each index. Specifically, for the four dimensions of the Balanced Scorecard (BSC), the maximum membership of the financial dimension is 0.4097, with an evaluation result of "fairly good"; the maximum membership of the customer dimension is 0.3125, with an evaluation result of "fairly good"; the maximum membership of the internal process dimension is 0.2778, with an evaluation result of "fairly good"; and the maximum membership of the learning and growth dimension is 0.3125, with an evaluation result of "fairly good".

The evaluation results demonstrate that Y City Tobacco Company has achieved continuous improvement in its quality procurement management, with all aspects of procurement quality management maintaining a "good" status, which can serve as a reference for other enterprises. However, it is noteworthy that none of the four dimensions or the comprehensive evaluation results have reached the "excellent" level, indicating significant room for optimization in various aspects of procurement quality management. Y City Tobacco Company should adhere to strategic objectives and comprehensively optimize all aspects of its operations. Specific measures include strengthening supplier management by establishing strict entry standards and dynamic evaluation mechanisms, optimizing supplier structures, streamlining procurement processes to enhance standardization and transparency, and introducing advanced information technology tools to improve efficiency. Additionally, based on a scientific performance evaluation system, regular assessments should be conducted across all dimensions. According to the evaluation results, in-depth analysis of operational issues should be carried out, and targeted measures should be implemented to optimize services, thereby improving overall performance levels and providing strong support for the group's high-quality development [5]. On this basis, this article will analyze the existing problems in procurement quality management at Y City Tobacco Company and lay the foundation for proposing performance optimization strategies in subsequent sections.

5 Problems to be Paid Attention to in the Evaluation of Quality Management of Tobacco Commercial Enterprises' Purchasing

The quality evaluation of procurement in tobacco commercial enterprises is a systematic project that requires comprehensive consideration from multiple dimensions. Through continuous improvement and optimization, it ensures the standardization and

efficiency of procurement activities. When conducting procurement quality management evaluations, tobacco commercial enterprises must address three key issues: "what to evaluate," "how to evaluate," and "how well the evaluation is conducted."

5.1 Solving the Problem of "What to Evaluate"

In the quality management evaluation of procurement in tobacco commercial enterprises, determining what to prioritize is the first critical step. On one hand, the evaluation system should comprehensively and objectively reflect all aspects of procurement operations, including supplier management, cost control, and quality assurance. It must thoroughly assess suppliers' quality management practices, standardization of procurement processes, operational efficiency, cost control, performance metrics, risk management, digitalization capabilities, and compliance. On the other hand, the evaluation indicators should be targeted and practical to facilitate effective assessment and comparison.

5.2 How to Evaluate

Firstly, an evaluation team should be established. A comprehensive procurement quality evaluation team must be formed, which will break down the overall strategic goals of the parent company and the current performance targets into specific sub-goals. Additionally, the entire implementation process of the procurement quality evaluation system should be monitored and controlled to promptly identify and rectify any issues.

On the other hand, procurement quality evaluation should employ scientific methodologies and techniques to ensure the objectivity and accuracy of assessment outcomes. For instance, a combination of quantitative and qualitative approaches can be utilized to assign values and adjust weights for various indicators, thereby generating comprehensive evaluation results. Furthermore, the methods should be practical and reproducible to facilitate evaluation and comparison.

Furthermore, it is essential to establish a clear procurement quality management evaluation system, defining the organizational structure for evaluation as well as the standards, procedures, and outcomes to enhance the standardization and rationality of the evaluation process, thereby ensuring more orderly management. Additionally, an appeal mechanism should be implemented to allow evaluated entities to raise objections to the evaluation results, guaranteeing the fairness and transparency of the evaluation [7].

5.3 How to Solve the Problem of "How to Evaluate"

On one hand, evaluation results should be promptly communicated to the evaluated entities to help them identify their strengths and weaknesses, enabling them to develop improvement strategies. On the other hand, regular performance evaluation audits must be conducted to examine potential issues such as flawed designs, non-standardized procedures, inaccurate data, or unreliable outcomes. A thorough analysis of the root causes should be carried out, followed by timely corrective actions to systematically address

deficiencies in performance management. This ensures the effectiveness of procurement quality management evaluations.

6 Conclusion

By introducing the BSC method to construct a multi-criteria evaluation model, this study establishes a grading system for quality management assessment in tobacco commercial enterprises' procurement processes. This approach transforms qualitative evaluations into quantitative metrics, effectively addressing the limitations of scientific rigor and objectivity in traditional qualitative assessments. The model also provides a reliable foundation for implementing risk control measures. In practical applications, the evaluation indicators can be appropriately adjusted according to different assessment targets and scopes. The development of this model offers valuable insights for enhancing procurement quality management standards in tobacco commercial enterprises.

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