

Research on Enterprise Full Level Organizational Collaboration Model Guided by "Goal Behavior"

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Abstract. With the transformation of the economy and society, the traditional organizational system of enterprises has become an important factor restricting the improvement of organizational efficiency. This article takes organizational optimization as the starting point and focuses on the problems faced by enterprise organizational efficiency management under traditional hierarchical organizations. It constructs a collaborative organizational system for all levels of enterprise positions based on the three levels of "enterprise department position", and applies the Key Performance Indicators and Balanced Score Card methods to design a "goal behavior" guidance model for enterprises, promoting the dynamic adaptation of organizational behavior and development goals, realize the improvement of organizational management efficiency.

Keywords: Job Collaboration; AB position; Organization; Balanced Score Card

1 Introduction

Organizational effectiveness is an important topic in organizational theory and management research. In today's rapidly developing economy, organizational effectiveness has become a key measure of the quality of enterprise survival and development. However, with the transformation of the economy and society, traditional hierarchical organizations have become an important factor restricting the improvement of organizational efficiency in enterprises^[1]. At present, theoretical research on organizational effectiveness of enterprises still takes hierarchical organization as the established framework, and focuses on unilateral research on the influencing factors and evaluations of organizational effectiveness, lacking practical value for improving organizational effectiveness of enterprises. In response to this issue, this article takes organizational optimization as the starting point, and focuses on the problems faced by enterprise organizational efficiency management under traditional hierarchical organizations. It proposes a networked organization based enterprise organizational efficiency management concept, in order to provide theoretical and practical guidance for enterprise organizational efficiency management.

2 Design of a Collaborative Framework for All Levels of Enterprise

An organization is a means of breaking down a wide and extensive set of tasks into manageable and quantifiable responsibilities, while also ensuring coordination in work^[2]. The purpose of building a comprehensive organizational collaboration system for enterprises is to reorganize departments, processes, and positions within the organization based on the actual characteristics of the enterprise. At the job level, department level, and enterprise level, a new model of efficient job collaboration management is constructed. On the basis of achieving a high degree of matching between personnel and positions, it further stimulates employees' desire for self-improvement, explores their potential, and enhances their personal strength. In order to cultivate composite talents with multiple abilities in one position, the specific design framework is shown in Figure 1.

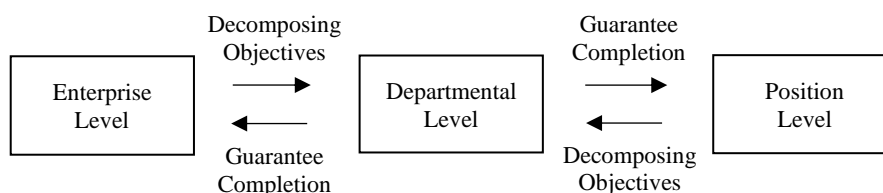


Fig. 1. Framework of enterprise collaborative management mode.

2.1 Position Level

As the most basic unit of behavior in an enterprise, the implementation of job responsibilities is carried out through job descriptions^[3]. At present, some job descriptions in enterprises only list responsibilities and lack guidance on employee behavior standards. Employees are not clear about the goals they need to achieve in their work, especially when there are changes in individual positions, which makes it difficult for department work to be completed in a timely manner. Therefore, it can be considered to implement the AB position work system in enterprises, which is the method of setting up main positions (A positions) and auxiliary positions (B positions) and allowing auxiliary positions to take on their job responsibilities in case of missing main positions. Set up N groups of AB positions within the department, with each position responsible person being both the main responsible person for the position (A position) and the auxiliary responsible person for each other (B position). When the main person in charge of one of the positions leaves due to reasons, the auxiliary person in charge will take over their duties, and each group of A and B positions will be jointly responsible for certain responsibilities under the leadership of department leaders, forming an AB position responsibility system work mode.

2.2 Departmental Level

As the direct bearers of enterprise strategic goals, departments must complete a diversified target system that supports enterprise strategy: market, production, technology, quality, economic indicators, and major work tasks, ensuring that departmental goals are consistent with enterprise development goals. The implementation at the departmental level can be carried out using the

key performance indicator method. KPI is the extraction and induction of key success factors in the organizational operation process, and is a performance measurement indicator system that plays a strategic guiding role for individual members, teams, or departments of the organization. Firstly, it can maximize the traction effect of the indicator system, enabling members at all levels of the organization to focus on behaviors that generate the greatest driving force for efficiency; Secondly, the indicator system constructed through KPI meets the SMART principle, which means that the indicators are specific, measurable, information is obtainable, responsibility related, and time limited.

2.3 Enterprise Level

Based on the analysis of the internal and external competitive environment during the business process, a series of global, innovative, and purposeful strategies are formulated for the future development direction, goals, and how to achieve their development goals in order to obtain excess profits and maintain sustainable development of the enterprise, in order to gain a long-term competitive advantage in the fiercely competitive market^[4]. It can be seen that in order to ensure smooth implementation of its development goals, it must be effectively decomposed into various departmental levels. In reality, the strategy, vision, or goal system of a company is usually very macro, such as "achieving the top three in the industry within the next three years," "completing business transformation within five years," etc., which is difficult to directly guide employee behavior. Therefore, enterprises need to form behavioral goals with clear guiding directions based on a thorough analysis of their development goals.

3 Design of the "Goal Behavior" Guidance Model for Enterprises

3.1 Selection of Model Methods

Enterprise level goal tasks play a decisive role in the survival and development of enterprises, and are the core content of employee behavior guidance^[5]. Currently, there are two widely used methods in the academic community: KPI-Key Performance Indicators and BSC-Balanced Score Card.

1. KPI-Key Performance Indicators

KPI is the extraction and induction of key success factors in the operational process of an organization, and is a performance measurement indicator system that plays a strategic guiding role for individual members, teams, or departments of the organization. KPIs can maximize the guiding role of the indicator system and encourage members at all levels of the organization to strive to complete the tasks assigned by KPIs^[6].

2. BSC-Balanced Score Card

The core idea of the balanced scorecard is to construct a mutually driven indicator system from four aspects: finance, customers, internal operations, learning, and growth, under the corporate strategy, to promote the achievement of corporate goals^[7]. BSC covers multiple key areas for achieving corporate goals, which is more in line with the diversified development goals of modern enterprises. It is no longer limited to the traditional idea of measuring financial indicators. By supplementing relevant indicators such as customers, internal operation

management, learning and growth, it strengthens employees in different departments' understanding of the overall picture of the enterprise and promotes them to understand their own roles and collaborate with each other.

In summary, the two methods have their own characteristics in constructing indicator systems and their respective advantages and disadvantages in implementation: the KPI method is simple and easy to implement, but it is easy to overlook the long-term development of the enterprise; BSC combines short-term benefits with long-term development goals, but its construction process is relatively complex. The accumulation and improvement of organizational efficiency in enterprises have put forward higher requirements for the diversification of their goals, which requires enterprises to pay attention to both the current performance level and the sustainable development of the enterprise; We need to meet customer needs while also being accountable to relevant stakeholders. Therefore, this article combines the two to construct a "goal behavior" guidance model for enterprises.

3.2 Construction of Key Objectives and Task Indicators for Enterprises

1. Build Process

The construction of enterprise key target tasks includes two steps: the first step is to build an enterprise key target task indicator library based on the BSC thinking method and from the perspective of internal management; The second step is to use principal component analysis to streamline the key target task indicator system of the enterprise^[8].

2. Construction of Key Objective Task Library

Firstly, based on a thorough analysis of the current development status, external environment, and internal strengths and weaknesses of the enterprise, senior managers use the balanced scorecard's four benchmark dimensions of finance, customers, internal operations, learning, and growth as benchmarks to clarify the development goals of core business and management areas^[9], and assign them to various departments.

Secondly, middle-level managers organize department employees, analyze enterprise goal planning, and combine department functional positioning to report key target task indicators for relevant business and management areas^[10].

Thirdly, the enterprise organizes high-level managers, middle level departments, and employee representatives to have a centralized discussion^[11]. During the discussion process, the "brainstorming" method is used to express opinions on indicators and supplement new indicator tasks, thereby forming a key target task library for the enterprise.

3. Optimization of Indicators Based on Principal Component Analysis

Due to the fact that the enterprise level key target task library comes from various departments, there is often a strong correlation between indicators. If these indicators are directly used to guide the behavior of departments and employees, there will be duplicate management of behavior. Therefore, it is necessary to optimize the enterprise's key target task library. This article adopts principal component analysis method for optimization^[12]. The calculation process is as follows:

(1) Build the raw data matrix. The enterprise key target tasks indicators work benchmark library has n indicators/tasks, and forms the original data matrix X based on the historical performance data of the enterprise on these indicators/tasks:

$$X = \begin{bmatrix} x_{11} & x_{12} & \dots & x_{1n} \\ x_{21} & x_{22} & \dots & x_{2n} \\ \dots & \dots & \dots & \dots \\ x_{m1} & x_{m2} & \dots & x_{mn} \end{bmatrix} \quad (1)$$

Where $X_j = [X_{1j}, X_{2j}, \dots, X_{mj}]$, $j = 1, 2, \dots, n$

(2) Standardization of the raw data matrix. For the convenience of discussion, the cost-oriented index is transformed into the benefit-oriented index, that is:

$$Y_j = \begin{cases} X_j & \text{benefit-oriented index} \\ -X_j & \text{cost-oriented index} \end{cases} = [y_{1j}, y_{2j}, \dots, y_{mj}] \quad (2)$$

The standardized calculation is as follows:

$$Z_{ij} = \frac{Y_{ij} - \bar{y}_j}{S_j}, \quad i = 1, 2, \dots, m; j = 1, 2, \dots, n \quad (3)$$

Where $\bar{y}_j = \frac{\sum_{i=1}^m Y_{ij}}{m}$, $S_j^2 = \frac{\sum_{i=1}^m (Y_{ij} - \bar{y}_j)^2}{m-1}$ From this, we get the normalized matrix Z:

$$Z = \begin{bmatrix} z_{11} & z_{12} & \dots & z_{1n} \\ z_{21} & z_{22} & \dots & z_{2n} \\ \dots & \dots & \dots & \dots \\ z_{m1} & z_{m2} & \dots & z_{mn} \end{bmatrix} \quad (4)$$

(3) Solve the correlation coefficient matrix R.

$$R = \begin{bmatrix} r_{11} & r_{12} & \dots & r_{1n} \\ r_{21} & r_{22} & \dots & r_{2n} \\ \dots & \dots & \dots & \dots \\ r_{m1} & r_{m2} & \dots & r_{mn} \end{bmatrix} \quad (5)$$

Where $r_{ij} = \frac{\sum_{k=1}^n z_{ki} z_{kj}}{n}$, $i, j = 1, 2, \dots, n$

(4) Solve the characteristic equation of correlation coefficient matrix R and the orthogonalized unit eigenvector.

$$|R - \lambda I_M| = 0 \quad (6)$$

This gives n eigenroots $\lambda_1 \geq \lambda_2 \geq \dots \geq \lambda_n \geq 0$

$$Rb_j = \lambda_j b_j \quad (7)$$

(5) Solve the principal component. The unit eigenvector b_j corresponding to λ_j is the coefficient of principal components F_j with respect to the original index, then the j principal component F_j of the original index is:

$$F_j = b_j^T Z \quad (8)$$

The variance contribution rate of the principal component a_j reflects the amount of information, which is calculated as follows:

$$a_j = \frac{\lambda_j}{\sum_{i=1}^n \lambda_i} \quad (9)$$

(6) Lect the principal component. The final number of principal components m to be selected is determined by the cumulative contribution rate of variance of principal components:

$$G(m) = \frac{\sum_{j=1}^m \lambda_j}{\sum_{k=1}^n \lambda_k} \quad (10)$$

The number of principal components should be selected to achieve both dimensionality reduction purpose and to include as much original information as possible. Therefore, when the cumulative contribution rate is greater than 85%, it indicates that the original indicator system can be represented, which means that the original indicator system has been streamlined.

4 Example Analysis

A company with production, manufacturing, and sales as its main business focuses on the four basic dimensions of the balanced scorecard based on clear future development goals. Each department is required to submit an enterprise level key target task library from the company's perspective and in combination with their own value positioning, as shown in the table 1.

Table 1. Enterprise level key target task library.

Key areas	Enterprise level key performance indicators	Key areas	Enterprise level key performance indicators
Finance	Sales profit margin x1 Sales target completion rate x2 Sales cost reduction rate x3 Sales growth rate x4	Internal operations	Timely completion rate of sales orders x13 R&D target achievement rate x14

Continued Table 1

Key areas	Enterprise level key performance indicators	Key areas	Enterprise level key performance indicators
Finance	Sales proportion of new products x5 Sales collection rate x6 Sales expense rate x7	Internal operations	Customized product completion rate x15 Inventory turnover rate x16 Procurement cost compression rate x17 Product qualification rate x18 Equipment normal operation rate x19 Timely procurement rate x20 Product energy consumption reduction rate x21 Timely completion rate of orders x22 Safety accident occurrence rate x23 Labor productivity x24 R&D investment rate x25
Customs	Customer satisfaction x8 Timely resolution rate of product problems x9 On site problem handling rate x10 Product information collection rate 11 Customer complaint rate x12	Learning and growth	Core employee training status x26 Ratio of highly educated employees x27 Product planning completion status x28 Product certification status x29 Market retention rate x30

Refine the indicators using SPSS statistical software and principal component analysis, as shown in the table 2.

Table 2. Principal component analysis explains total variables.

Principal component fraction	Eigenvalue	Cumulative variance contribution rate	Principal component fraction	Eigenvalue	Cumulative variance contribution rate
1	6.11	22.16%	0.23	16	96.47%
2	5.08	40.58%	0.21	17	97.21%
3	4.34	56.31%	0.15	18	97.75%
4	3.99	70.77%	0.13	19	98.23%
5	2.81	78.68%	0.13	20	98.69%
6	1.78	85.15%	0.12	21	99.12%
7	0.47	86.86%	0.11	22	99.53%
8	0.41	88.33%	0.10	23	99.90%
9	0.33	89.54%	0.10	24	99.93%
10	0.32	90.71%	0.10	25	99.95%
11	0.32	91.87%	0.10	26	99.98%
12	0.31	92.99%	0	27	100.00%
13	0.25	93.91%	0	28	100.00%
14	0.25	94.81%	0	29	100.00%
15	0.23	95.64%	0	30	100.00%

The rotation of the load matrix of the principal component can better explain and name the structure of the existing indicator system, as shown in the table 3.

Table 3. Factor load matrix after rotation.

Indicator Name	F1	F2	F3	F4	F5	F6
Sales profit margin x1	0.93					
Sales growth rate x4	0.89					
Market retention rate x30	0.96					
Sales collection rate x6	0.79					
Product qualification rate x18		0.88				
Labor productivity x24		0.69				
Timely completion rate of sales orders x13		0.77				
R&D target achievement rate x14		0.84				
Safety accident occurrence rate x23		0.77				
Sales proportion of new products x5			0.80			
Equipment normal operation rate x19			0.89			
Product energy consumption reduction rate x21			0.93			
Timely completion rate of orders x22				0.847		
R&D investment rate x25				0.66		
Inventory turnover rate x16				0.69		
Sales target completion rate x2					0.95	
Product planning completion status x28					0.75	
Customized product completion rate x15						0.63
Customer satisfaction x8						0.78
On site problem handling rate x10						0.88

The first principal component F1 combines sales profit margin, sales growth rate, market retention rate, and sales collection rate; The second principal component F2 combines product qualification rate, labor productivity, timely completion rate of sales orders, achievement rate of research and development goals, and occurrence rate of safety accidents; The third principal component F3 combines the proportion of new product sales, equipment normal operation rate, and product energy consumption reduction rate; The fourth principal component F4 combines the timely completion rate of orders, R&D investment rate, and inventory turnover rate; The fifth principal component F5 combines the completion status of product planning and the completion rate of customized products; The sixth principal component F6 combines customer satisfaction and on-site problem handling rate. It can be seen that the statistical correction process based on principal component analysis has simplified the indicator system and redefined the personalized key areas for enterprises to achieve strategic goals.

5 Conclusion and Inspiration

Based on the multi-level concept of organizational efficiency, the paper proposes a three-level enterprise level organizational collaboration system of "enterprise department position". At the job level, based on the job description, propose the idea of implementing the AB job system in the enterprise, by establishing auxiliary positions (B positions) to solve the problem of job deficiencies when the main position (A position) leaves, and prevent individual job changes from affecting the overall progress of work; At the departmental level, starting from the diversified goal system that supports the enterprise strategy, proposing the implementation of

key performance indicator method at the departmental level to guide departmental behavior is conducive to ensuring the consistency of the enterprise's upper and lower goals; At the enterprise level, based on the analysis of the internal and external competitive environment, starting from the perspective of enterprise strategic development goals, the macro development goals are effectively decomposed into various departmental levels, and the development goals are fully analyzed.

After clarifying the goals at the job, department, and enterprise levels, based on KPI (Key Performance Indicators) and BSC (Balanced Score Card) theory, principal component analysis was applied to design the enterprise's "goal behavior" guidance model, and an enterprise level key target task indicator design scheme was constructed, thus forming the organizational management system required for efficient operation of the enterprise organization, It provides a clear work direction for all employees of the enterprise, achieving the improvement of organizational management efficiency.

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